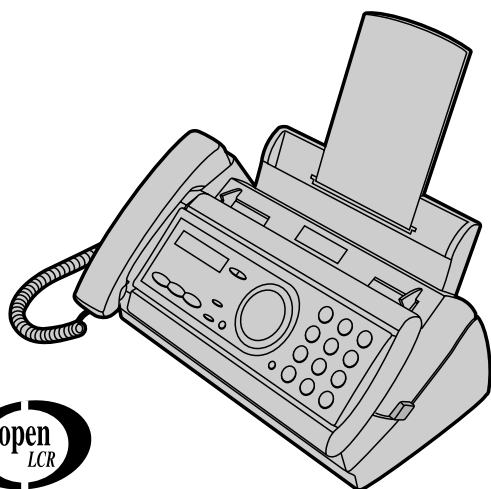


SHARP SERVICE MANUAL

No. 00ZUXA255USME



www.OpenLCR.com

FACSIMILE MODEL UX-A255

SELECTION CODE	DESTINATION
UX-A255U	U.S.A.

Chapters 1, 2, 3, 7 and 8 of this manual are omitted because they are partly common to the UX-P100U. Please refer to previous service manual (00ZUXP100USME) for these chapters.

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PARTS GUIDE

Parts marked with "△" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

CAUTION FOR BATTERY REPLACEMENT

(Danish) ADVARSEL !

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.

(English) Caution !

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's
instructions.

(Finnish) VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

(French) ATTENTION

Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux
instructions du fabricant.

(Swedish) VARNING

Explosionsfare vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

(German) Achtung

Explosionsgefahr bei Verwendung inkorrektter Batterien.
Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder
vom Hersteller empfohlene Batterien verwendet werden.
Entsorgung der gebrauchten Batterien nur nach den vom
Hersteller angegebenen Anweisungen.

CHAPTER 1. GENERAL DESCRIPTION

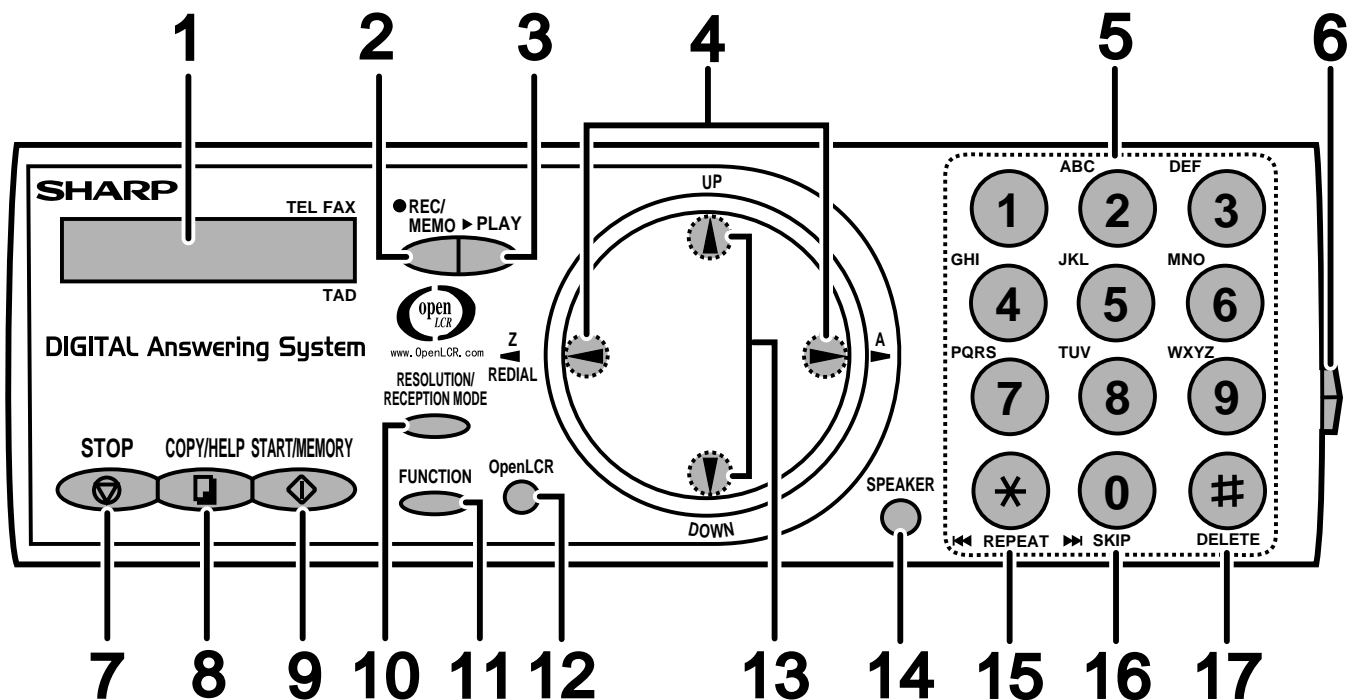
[1] Specifications

Automatic dialing:	30 numbers	Compatibility:	ITU-T (CCITT) G3 mode
Imaging film:	Initial starter roll: (included with machine): 32 ft. (10 m) (approx. 30 letter-size pages) Replacement roll (not included): UX-5CR 164 ft. (50 m) roll (one roll yields approx. 150 letter-size pages)	Input document size:	Automatic feeding: Width: 5.8 to 8.5" (148 to 216 mm) Length: 5.5 to 11" (140 to 279 mm) Manual feeding: Width: 5.8 to 8.5" (148 to 216 mm) Length: 5.5 to 23.6" (140 to 600 mm)
Memory size* :	504 KB (approx. 30 average pages with no voice messages recorded and ECM turned off, or 20 minutes of voice documents in memory)	Effective scanning width:	8.3" (210 mm) max.
Modem speed:	14,400 bps with automatic fallback to lower speed	Effective printing width:	8.3" (210 mm) max.
Transmission time* :	Approx. 6 seconds (only when ECM is on)	Contrast control:	Automatic/Dark selectable
Resolution:	Horizontal: 203 pels/inch (8 dots/mm) Vertical: Standard: 98 lines/inch (3.85 lines/mm) Fine/Halftone: 196 lines/inch (7.7 lines/mm) Super fine: 391 lines/inch (15.4 lines/mm)	Reception modes:	TEL/FAX/TAD
Automatic document feeder:	10 pages max. (letter/A4, 20 lb paper)	Copy function:	Single/Multi (99 copies/page)
Recording system:	Thermal transfer recording	Telephone function:	Yes (cannot be used if power fails)
Halftone (grayscale):	64 levels	Power requirements:	120 V AC, 60 Hz
Compression scheme:	MH, MR, MMR	Operating temperature:	41 - 95°F (5 - 35°C)
Display:	16-digit LCD display	Humidity:	Maximum: 85 % RH
Applicable telephone line:	Public switched telephone network	Power consumption:	Stand-by: 3.6 W Maximum: 100 W
Paper tray capacity:	Letter: Approx. 50 sheets (20-lb. copier paper at room temperature; maximum stack height should not be higher than the line on the tray) Legal: 5 sheets Recommended paper weight is 20-lb. Copy Bond	Dimensions (without attachments):	Width: 12.9" (327 mm) Depth: 7.6" (193 mm) Height: 6.4" (163 mm)
		Weight (without attachments):	Approx. 6.2 lbs. (2.8 kg)

* Based on ITU-T (CCITT) Test Chart #1 at standard resolution in Sharp special mode, excluding time for protocol signals (i.e., ITU-T phase C time only).

As a part of our policy of continuous improvement, SHARP reserves the right to make design and specification changes for product improvement without prior notice. The performance specifications figures indicated are nominal values of production units. There may be some deviation from these values in individual units.

[2] Operation panel



1. Display

This displays messages and prompts to help you operate the machine.

2. REC/MEMO key

Press this key to record an outgoing message, phone conversation, or memo.

3. PLAY key

Press this key to play recorded messages.

4. Left and right arrow keys

Auto-dial numbers: When sending a fax or making a phone call, press these keys to scroll through your auto-dial numbers, the "REVIEW CALLS" list (only available if you have Caller ID), and the last number dialed (redial).

FUNCTION key settings: Press the right arrow key after scrolling with the up and down arrow keys to select a FUNCTION key setting.

5. Number keys

Use these keys to dial numbers, and enter numbers and letters when storing auto-dial numbers.

6. Panel release

Press this release to open the operation panel.

7. STOP key

Press this key to cancel operations before they are completed.

8. COPY/HELP key

When a document is in the feeder, press this key to make a copy of a document. At any other time, press this key to print out the Help List, a quick reference guide to the operation of your fax machine.

9. START/MEMORY key

Press this key after dialing to begin fax transmission. Press this key before dialing to send a fax through memory. The key can also be pressed in the date and time display to show the percentage of memory currently used.

10. RESOLUTION / RECEPTION MODE key

When a document is in the feeder, press this key to adjust the resolution for faxing or copying. At any other time, press this key to select the reception mode (an arrow in the display will point to the currently selected reception mode).

11. FUNCTION key

Press this key to followed by the arrow keys select special functions and setting.

12. OpenLCR key

Press this key to register for OpenLCR service and receive rate information to your fax.

13. UP and DOWN arrow keys

Enlarge/Reduce setting: When marking a copy of a document, press these keys to select an enlarge/reduce setting.

Volume setting: When a document is not in the feeder, press these keys to change the handset volume when the handset is lifted, the speaker volume when the **SPEAKER** key has been pressed, or the ringer volume at any other time.

FUNCTION key setting: Press these keys after pressing the **FUNCTION** key to scroll through the FUNCTION MODE settings.

14. SPEAKER key

Press this key to listen to the line and fax tones through the speaker when faxing a document.

Note: This is not a speakerphone. You must pick up the handset to talk with the other party.

15. REPEAT key

Press this key while listening to a message to play it again.

16. SKIP key

Press this key while listening to a message to skip to the next message.

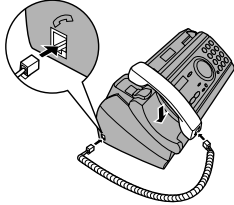
17. DELETE key

Press this key to erase recorded messages.

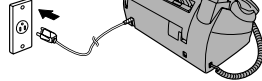
[5] Quick setup guide

Note: To enter your name and fax number and set the date and time so that they appear at the top of each fax you send, see pages 16 - 19 of your operation manual.

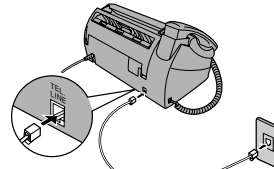
- 1** Connect the handset and place it on the handset rest.



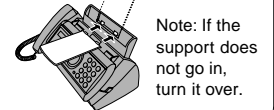
- 2** Plug the power cord into a 120 V grounded outlet.



- 3** Connect the telephone line cord to the **TEL. LINE** jack and a wall telephone jack.



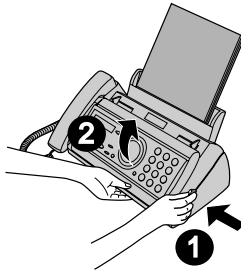
- 4** Attach the paper tray and document support.



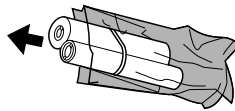
Note: If the support does not go in, turn it over.

- 5** Load the imaging film.

1. Open the operation panel (press **1**).

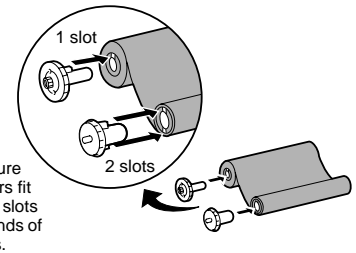


2. Remove the imaging film from its packaging. Cut the band that holds the rolls together.

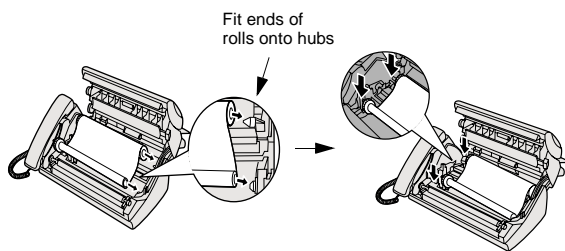


3. Insert the green gears.

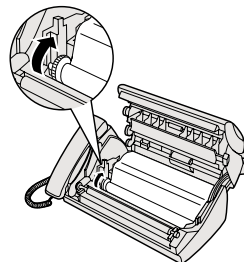
IMPORTANT: Do NOT discard the green gears. They are not included with replacement imaging film.



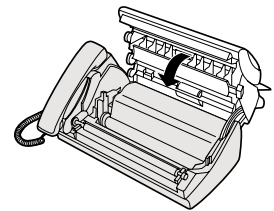
4. Insert the film into the print compartment.



5. Rotate the front spool as shown until the film is taut.

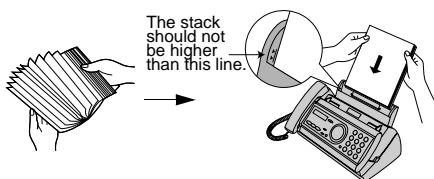


6. Close the operation panel (press down on both sides to make sure it clicks into place).



- 6** Load paper.

Insert the paper **print side down**.



- GENTLY LOAD PAPER INTO THE PAPER TRAY.
- DO NOT FORCE IT DOWN INTO THE FEED SLOT.

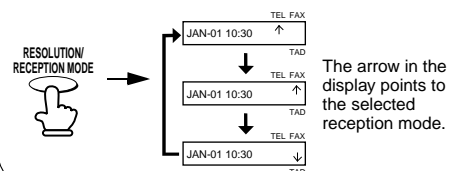
Note: If you loaded legal paper, see page 15 of the operation manual to change the paper size setting to LEGAL.

- 7** Record an outgoing message (greeting) for TAD mode inviting callers to leave a message. (Note: "TAD" stands for "Telephone Answering Device".)

1. Press **REC/ MEMO**, **1**, and **2**.
2. Lift the handset, press **START/ MEMORY**, and speak into the handset.
3. When finished, press **STOP**.

- 8** Select the reception mode for incoming faxes and voice calls:

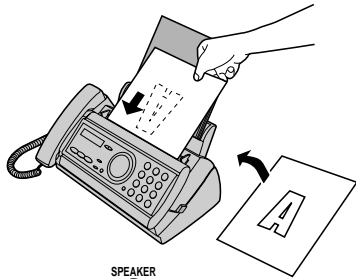
FAX mode: The machine automatically answers all calls and begins fax reception.
TEL mode: Lift the handset when the machine rings. Press **START/ MEMORY** to begin fax reception.
TAD mode: Select this mode when you go out to receive both voice messages and faxes. (Note: To select TAD mode, you must first record an outgoing message.)



[6] Quick reference guide

SENDING FAXES

Place your document (up to 10 pages) face down in the document feeder.



Normal Dialing

- 1. Lift the handset or press .
- 2. Dial the fax number.
- 3. Wait for the reception tone (if a person answers, ask them to press their Start key).
- 4. Press .

Automatic Dialing

- 1. Press or until the desired destination appears in the display.
- 2. Press .

Direct Keypad Dialing

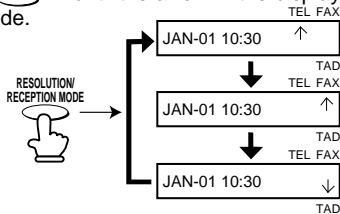
- 1. Dial the fax number.
- 2. Press .

RECORDING AN OUTGOING MESSAGE

- 1. Press , , and .
- 2. Lift the handset, press , and speak into the handset.
- 3. When finished, press .

RECEIVING FAXES

Press the until the arrow in the display points to the desired reception mode.



FAX mode: The fax machine automatically answers and receives the incoming document.

TEL mode: Answer all calls (even faxes) by picking up the handset. To begin fax reception, press .

STORING AUTO DIAL NUMBERS

- 1. Press once and twice.
- 2. Enter the full fax/phone number.
- 3. Press .
- 4. Enter the name by pressing number keys. (To enter two letters in succession that require the same key, press after entering the first letter.)

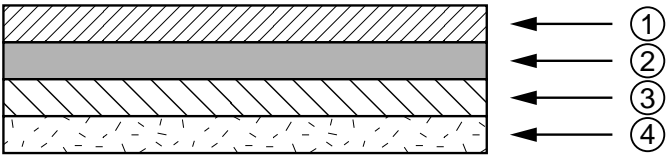
SPACE =	G =	N =	U =
A =	H =	O =	V =
B =	I =	P =	W =
C =	J =	Q =	X =
D =	K =	R =	Y =
E =	L =	S =	Z =
F =	M =	T =	

- 5. Press and then .

[7] Option imaging film specifications (UX-5CR)

1. Structure

This article is composed of polyester film coated with heat-resistant layer, matt layer and hot melt ink layer, leader film and paper core. Ink film specification is "DNP standard ink film HC".



- ① Heat Resistant Layer
- ② Base Film
- ③ Matt Layer
- ④ Hot melt Ink Layer

2. Details of compositions

2-1. Base film

Heading	Requirements	Measuring method
Material	Polyethylene-terephthalate	—

2-2. Heat resistant layer

Heading	Requirements	Measuring method
Grade	HR Mixer P-5	—

2-3. Matt layer

Heading	Requirements	Measuring method
Grade	ML Sumi	—

2-4. Hot melt ink layer

Heading	Requirements	Measuring method
Grade	#507W	—

CHAPTER 2. ADJUSTMENTS

[1] Adjustments

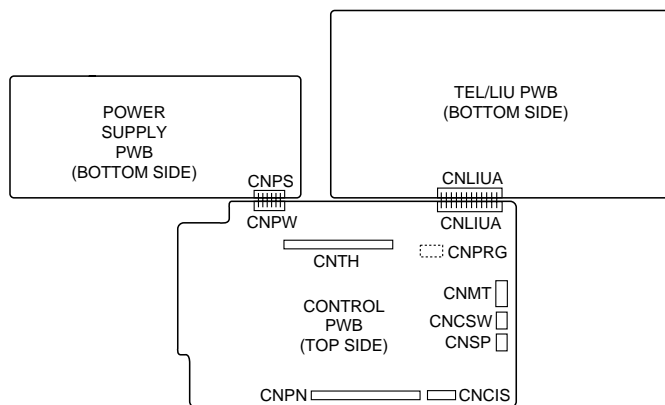
General

Since the following adjustments and settings are provided for this model, make adjustments and/or setup as necessary.

1. Adjustments of output voltage (FACTORY ONLY)

1. Install the power supply unit in the machine.
2. Set the recording paper and document.
3. When the document is loaded, power is supplied to the output lines. Confirm that outputs are within the limits below.

Output voltage settings



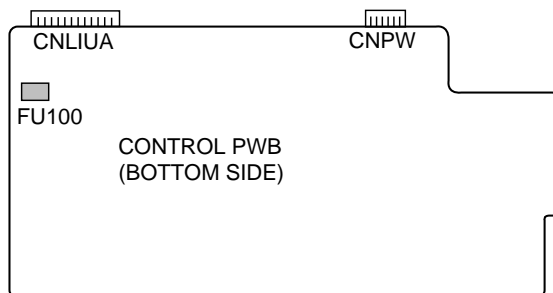
Output	Voltage limits
+5V	4.25V ~ 5.75V
+24V	23.3V ~ 24.7V

Connector No.	CNPW
Pin No.	
1	+24V
2	+24V
3	MG
4	MG
5	DG
6	Vreg(+5V)

2. IC protectors replacement

ICPs (IC Protectors) are installed to protect the motor driver circuit. ICPs protect various ICs and electronic circuits from an overcurrent condition.

The location of ICPs are shown below:



- (1) FU100 (KAB2402) is installed in order to protect IC's from an over-current generated in the motor drive circuit. If FU100 is open, replace it with a new one.

3. Settings

(1) Dial mode selector

DIAL mode (Soft Switch No. SW-B4 DATA No. 3)

(step 1) Select "OPTION SETTING".

KEY : FUNCTION → ▼▼▼ → ►
 DISPLAY: OPTION SETTING NUMBER OF RING

(step 2) Select "DIAL MODE".

KEY: Push ▼ until DIAL MODE is → ►
 indicated because the number of ▼ 's changes by the model.

DISPLAY: DIAL MODE 1=TONE, 2=PULSE

(step 3) Select, using "1" or "2".

KEY: ①
 DISPLAY: TONE SELECTED

KEY: ②
 DISPLAY: PULSE SELECTED

(step 4) End, using the "STOP" key.

KEY: STOP

4. Volume adjustment

You can adjust the volume of the speaker, handset, and ringer using the UP and DOWN arrow keys.

(1) Speaker

1. Press the **SPEAKER** key.
 2. Press the **UP** or **DOWN** until the display shows the desired volume level.
- Press **SPEAKER** key again to turn off the speaker.

(2) Handset

1. When talking through the handset, press **UP** or **DOWN** until the display shows the desired volume level.

Display:
RECEIVER: HIGH
 ↑
RECEIVER: MIDDLE
 ↑
RECEIVER: LOW

- **Note:** The volume reverts to MIDDLE each time you replace the handset.

(3) Ringer

1. Press the **UP** or **DOWN** key. (Make sure **SPEAKER** key has not been pressed, the handset is not lifted, and a document is not loaded in the feeder.)

Display:
RINGER: HIGH
 ↑
RINGER: MIDDLE
 ↑
RINGER: LOW
 ↑
RINGER OFF: OK?

- The ringer will ring once at the selected level, then the date and time will reappear in the display.

2. If you selected RINGER OFF: OK?, press **START/MEMORY** key.

[2] Diagnostics and service soft switch

1. Operating procedure

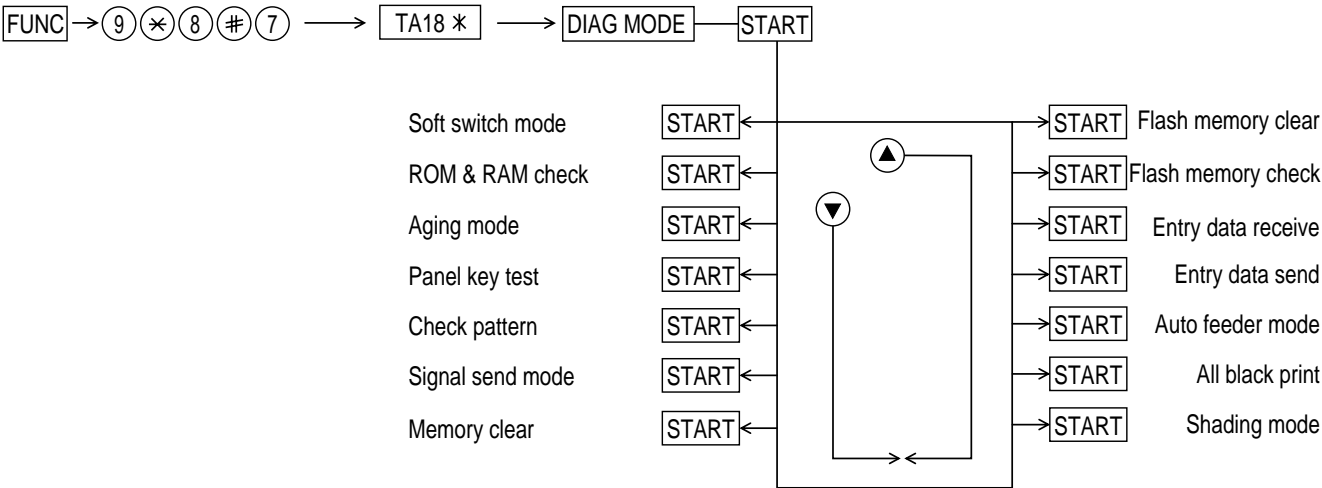
(1) Entering the diagnostic mode

Press **[FUNC]** → **[9]** → **[✕]** → **[8]** → **[#]** → **[7]**, and the following display will appear.

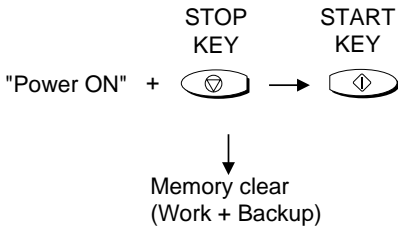
ROM Ver. TA18 ✕ After 2 sec: **[DIAG MODE]**

TA18 ✕

Then press the **[START]** key. Select the desired item with the **[✕]** key or the **[#]** key or select with the rapid key. Enter the mode with the **START** key.
(Diag•specifications)



If the diag mode cannot be set, repeat the diag mode operation, performing the following operation.
After the power is turned on and "WAIT A MOMENT" is indicated, press the **STOP** key.



In relation with the process response (request from Production Engineering) "WAIT A MOMENT" clock indication may appear depending on STOP key timing. If the STOP key is held down, "MEMORY CLEAR?" appears.

2. Diagnostic items

ITEM No.	Contents	Function
1	SOFT SWITCH MODE	Soft switches are displayed and changed. List can be output.
2	ROM & RAM CHECK	ROM is sum-checked, and RAM is matched. Result list is output.
3	AGING MODE	10 sheets of check patterns are output every 5 minutes per sheet.
4	PANEL KEY TEST	Panel keys are tested. Result list is output.
5	CHECK PATTERN	Check pattern is output.
6	SIGNAL SEND MODE	Various signals of FAX communication are output.
7	MEMORY CLEAR	Back-up memory is cleared, and is set at delivery.
8	SHADING MODE	Shading compensation is performed in this mode.
9	ALL BLACK PRINT	To check the print head, whole dots are printed over the interval of 2 m.
10	AUTO FEEDER MODE	Insertion and discharge of document are tested.
11	ENTRY DATA SEND	Registered content is sent.
12	ENTRY DATA RECEIVE	Registered content is received, and its list is output.
13	FLASH MEMORY CHECK	Checks flash memory write/read.
14	FLASH MEMORY CLEAR	Checks flash memory clearing.

3. Diagnostic items description

3. 1. Soft switch mode

Used to change the soft switch settings.

The soft switch which is stored internally is set by using the keys.

The available soft switches are SW-A1 to SW-N3.

The content of soft switches is shown in page 2-5 to 2-18.

The contents are set to factory default settings.

3. 2. ROM & RAM check

ROM executes the sum check, and RAM executes the matching test. The result will be notified with the number of short sounds of the buzzer as well as by printing the ROM & RAM check list.

Number of short sounds of buzzer 0 → No error

1 → ROM error

2 → RAM error (4 Kbyte SRAM or
512 Kbyte DRAM)

3. 3. Aging mode

If any document is present, copying will be executed sheet by sheet. If no document is present, the check pattern will be printed sheet by sheet. This operation will be executed at a rate of one sheet per 5minutes, and will be ended at a total of 10 sheets.

3. 4. Panel key test

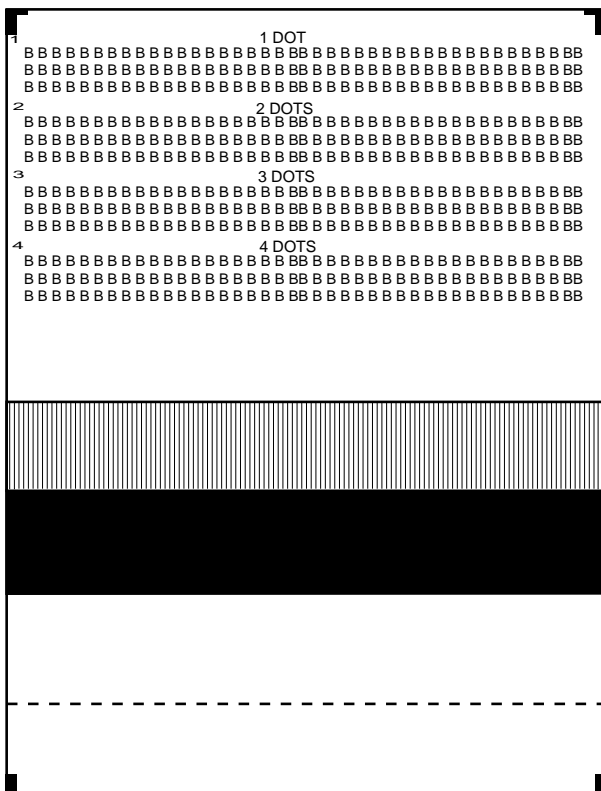
This mode is used to check whether each key operates properly. Press the key on the operation panel, and the key will be displayed on the display. Therefore, press all keys. At this time, finally press the STOP key.

When the STOP key is pressed, the keys which are not judged as "pressed" will be printed on the result list.

- LED part of the contact image sensor (CIS) is kept on during the term from when "START" of the panel test mode to end with the STOP key.

3. 5. Check pattern

This mode is used to check the state of the printing head. It is ended with the following pattern printed on one printing sheet.



3. 6. Signal send mode

This mode is used to send various signals to the circuit during FAX communication. Every push of START key sends a signal in the following sequence. Moreover, the signal sound is also output to the speaker when the line monitor of the soft switch is on.

- [1] No signals
- [2] 14400BPS (V.33)
- [3] 12000BPS (V.33)
- [4] 14400BPS (V.17)
- [5] 12000BPS (V.17)
- [6] 9600BPS (V.17)
- [7] 7200BPS (V.17)
- [8] 9600BPS (V.29)
- [9] 7200BPS (V.29)
- [10] 4800BPS (V.27ter)
- [11] 2400BPS (V.27ter)
- [12] 300BPS (FLAG)
- [13] 2100Hz (CED)
- [14] 1100Hz (CNG)

3. 7. Memory clear

This mode is used to clear the backup memory and reset to the default settings.

3. 8. Shading mode

The mode is used for the shading compensation. For reading, set up the special original paper.

The compensation memorizes the reference data of white and black for reading.

Moreover, the memorized data is not erased even if memory clear mode is executed.

3. 9. All black print

This mode is used to check the state of the printing head and to intentionally overheat it. Whole dots are printed over the interval of 2 m. If it is overheated or the printing sheet is jammed, press STOP key for the end.

3. 10. Auto feeder mode

In this mode, a document is inserted and discharged to check the auto feed function.

After this mode is started, set a document, and the document feed will be automatically tested.

3. 11. Entry data send

This mode is used to send the registered data to another machine and make the other machine copy the registered content.

Before sending in this mode, it is necessary to set the other machine at the entry data receive mode.

The following information will be sent to the remote machine:

1. Telephone list data
2. Sender register data
3. Optional setting content
4. Soft switch content
5. Junk fax number list
6. Recording setting list data

3. 12. Entry data receive

In this mode, the registered data sent from the other machine is received and the received data is registered in the machine. When this mode is used for receiving, the other machine must be in the entry data send mode.

After receiving is completed, the following lists are printed.

- 1. Telephone list data
- 2. Sender register data (*)
- 3. Optional setting list (*)
- 4. Soft switch content
- 5. Junk fax number list (*)
- 6. Recording setting list data (*)

(*): Refer to SETUP LIST

3. 13. Flash memory check

Data is written into and read from the flash memory to check data conformity. When the unit enters this mode, the check is started.

3. 14. Flash memory clear

Data in the flash memory is cleared (memory clear). When the unit enters this mode, the check is started.

*Operation of hardware and signal in the flash memory check mode and flash memory clear mode, and the result of check.

The result is announced by the buzzer beeps. The result of check is printed.

Beeps
0 → No error
1 → Memory error

4. How to make soft switch setting

To enter the soft switch mode, press the following key entries in sequence.

Press

FUNCTION

9

*

8

#

7

START

START



DATA No.

1

2

3

4

5

6

7

8

S F T

SW-A1 =

0

0

0

0

0

0

0

0

S F T

SW-A1 =

1

0

0

0

0

0

0

0

S F T

SW-A1 =

1

0

0

0

0

0

0

0

S F T

SW-A1 =

1

0

0

0

0

0

0

0

S F T

SW-A1 =

1

0

0

0

0

0

0

0

S F T

SW-A2 =

0

0

0

0

0

0

0

0

S F T

SW-N3 =

0

0

0

0

0

0

0

0

Press FUNCTION key.

Press # key.

Press * key.

Bit1 - 8 are set.

Press START key during setting.

Soft SW-A2 - SW-N3 are set.

• To finish the settings halfway between SW-A1 and SW-N3, press the STOP key. In this case, the setting being done to the SW No. on display will be nullified while settings done to the preceding SW No. remain in effect.

• When the COPY key is pressed, the contents of soft switches are printed.

The soft switch mode is terminated.

5. Soft switch description

• Soft switch

SW NO.	DATA NO.	ITEM	Switch setting and function										Initial setting	Remarks							
			1					0													
SW I A1	1	Protect from echo	No					Yes					0								
	2	Forced 4800 BPS reception	Yes					No					0								
	3	Footer print	Yes					No					0								
	4	Length limitation of copy/send/receive	No limit					Copy/send: 60cm Receive: 1m					0								
	5	CSI transmission	No transmitted					Transmitted					0								
	6	DIS receive acknowledgement during G3 transmission	Twice					NSF: Once DIS: Twice					0								
	7	Non-modulated carrier for V29 transmission mode	Yes					No					0								
	8	EOL detect timer	25 s					13 s					0								
SW I A2	1 2 3 4	Modem speed	V.33		V.17				V.29		V.27 ter		1 0 0 0								
			14400	12000	14400	12000	9600	7200	9600	7200	4800	2400									
			0	0	1	1	1	1	0	0	0	0									
			1	1	0	0	0	0	0	0	0	0									
			0	1	0	1	0	1	0	1	1	0									
	5	Sender's information transmit	No					Yes					0								
	6	Reserved											0								
	7	Communication error treatment in RTN sending mode (reception)	No communication error					Communication error					0								
	8	CNG transmission	No					Yes					0								
	SW I A3	1 2	CED tone signal interval			1000ms		750ms		500ms		75ms		0 0							
No. 1				1		1		0		0											
No. 2				1		0		1		0											
3		MR coding	No					Yes					0								
4		ECM mode	No					Yes					0	OPTION							
5		ECM MMR mode	No					Yes					0								
6		Reserved											0								
7		Reserved											0								
8		Reserved											0								
SW I A4	1 2 3 4 5	Signal transmission level	Binary input No. = 16 8 4 2 1 1 2 3 4 5 0 1 0 0 0										0 1 0 0 0								
			6	Protocol monitor (error print)	Printed at com. error					Not printed					0						
					7	Protocol monitor	Yes					No					0				
							8	Line monitor	Yes						No					0	
									SW I A5	1 2	Digital line equalization setting (Reception)				7.2km		3.6km		1.8km		0km
	No. 1		1		1		0					0									
	No. 2		1		0		1					0									
	3 4	Digital line equalization setting (Transmission)			7.2km		3.6km			1.8km		0km		0 1							
No. 3			1		1		0			0											
No. 4			1		0		1			0											
5 6	Digital cable equalizer setting (Reception for Caller ID)			7.2km				0km				0 0									
		No. 5		1				0													
		No. 6		1				0													
7	Error criterion	10 ~ 20 %					5 ~ 10 %					0									
8	Anti junk fax check	Yes					No					1									

SW NO.	DATA NO.	ITEM	Switch setting and function					Initial setting	Remarks
			1		0				
SW I A6	1	Reserved						0	
	2	End Buzzer	Yes		No			1	
	3	Disconnect the line when DIS is received in RX mode	No		Yes			1	
	4	Equalizer freeze control (MODEM)	On		Off			0	
	5	Equalizer freeze control 7200 BPS only	No		Yes			0	
	6	CNG transmission in manual TX mode	Yes		No			1	
	7	Reserved						0	
	8	Modem speed automatic fallback when RX level is under -40dBm	Yes		No			0	
SW I B1	1	Recall interval	Binary input No. = 8 4 2 1 1 2 3 4 0 1 0 1					0	
	2							1	
	3							0	
	4							1	
	5	Recall times	Binary input No. = 8 4 2 1 5 6 7 8 0 0 1 1					0	
	6							0	
	7							1	
	8							1	
SW I B2	1	Dial pausing (sec/pause)	4 sec		2 sec			0	
	2	Dial tone detection (before auto dial)	No		Yes			1	
	3	Reserved						0	
	4	Busy tone detection (after auto dial)	No		Yes			0	
	5	Waiting time after dialing		45 seconds	55 seconds	90 seconds	140 seconds	0	
	6		No.5	0	0	1	1		
			No.6	0	1	0	1	0	
	7	Reserved						0	
8	Reserved						0		
SW I B3	1	Reserved						0	
	2	Reserved						0	
	3	Reserved						0	
	4	Reserved						0	
	5	Reserved						0	
	6	Auto dial mode delay timer of before line connect		0 second	1.5 seconds	3.0 seconds	4.5 seconds	0	
	7		No.6	0	0	1	1		
			No.7	0	1	0	1	0	
8	Reserved						0		
SW I B4	1	Auto dial mode delay timer of after line connect		1.7 seconds	3.0 seconds	3.6 seconds	4.0 seconds	0	
	2		No.1	0	0	1	1		
			No.2	0	1	0	1		
	3	Dial mode	Tone		Pulse			1	OPTION
	4	Pulse → Tone change function by ✕ key	Enable		Disable			1	
	5	Dial pulse make/break ratio (%)	40/60		33/67			1	
	6	Reserved						0	
	7	Reserved						0	
8	Recalling fixed only one time when dialing was unsuccessful without detecting busy tone signal	Yes		No			1		
SW I B5	1	DTMF signal transmission level (Low)	Binary input No. = 16 8 4 2 1 1 2 3 4 5 0 1 0 0 1					0	
	2							1	
	3							0	
	4							0	
	5							1	
	6	Reserved						0	
	7	Reserved						0	
	8	Reserved						0	

SW NO.	DATA NO.	ITEM	Switch setting and function					Initial setting	Remarks	
			1		0					
SW I B6	1	DTMF signal transmission level (High)	Binary input					0		
	2		No. = 16 8 4 2 1					0		
	3		1 2 3 4 5					1		
	4		0 0 1 0 1					0		
	5							1		
	6	Dial tone detection (LCR center call)	No		Yes			0		
	7	Reserved						0		
	8	Reserved						0		
SW I C1	1 2	Reading slice (Binary)		Factory setting	Light	Dark	Darker in dark	0 0		
			No. 1	0	1	0	1			
			No. 2	0	0	1	1			
	3 4	Reading slice (Half tone)		Factory setting	Light	Dark	Darker in dark	0 0		
			No. 3	0	1	0	1			
			No. 4	0	0	1	1			
	5	Line density selection	Fine			Standard			0	
	6	Reserved							0	
	7	MTF correction in half tone mode	No			Yes			0	
	8	Reserved							0	
SW I D1	1	Number of rings for auto receive	Binary input					0	OPTION	
	2		No. = 8 4 2 1					1		
	3		1 2 3 4					0		
	4		0 1 0 0					0		
	5	Automatic switching manual to auto receive mode	Reception after 5 rings			No reception			0	
	6	Reserved							0	
	7 8	CI detect frequency		As PTT	11.5Hz	13.0Hz	20.0Hz	0 0		
No.7			0	0	1	1				
No.8			0	1	0	1				
SW I D2	1 2 3	Distinctive ringing setting (PATTERN 4 and 5 are for CANADA only)		No. 1	No. 2		No. 3	0 0 0	OPTION	
			OFF	0	0		0			
			STANDARD	0	0		1			
			PATTERN1	0	1		0			
			PATTERN2	0	1		1			
			PATTERN3	1	0		0			
			PATTERN4	1	0		1			
	PATTERN5	1	1		0					
	4	Reserved							0	
	5	Caller ID function	Yes			No			0	OPTION
	6	Caller ID detect during CI off	All times			Only first			0	
	7	Reserved							0	
8	Reserved							0		
SW I D3	1	CI off detection timer (0-1550ms setting by 50ms step)	Binary input					0		
	2		No. = 16 8 4 2 1					1		
	3		1 2 3 4 5					1		
	4		0 1 1 1 0					1		
	5							0		
	6	Reserved							0	
	7	Reserved							0	
8	Reserved							0		

SW NO.	DATA NO.	ITEM	Switch setting and function					Initial setting	Remarks	
			1		0					
SW I E1	1	Reserved						0		
	2	Reserved						0		
	3	Reserved						0		
	4	Reserved						0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
	8	Reserved						0		
SW I E2	1	Reserved						0		
	2	Reserved						0		
	3	Reserved						0		
	4	Reserved						0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
	8	Reserved						0		
SW I E3	1	Reserved						0		
	2	Reserved						0		
	3	Reserved						0		
	4	Reserved						0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
	8	Reserved						0		
SW I F1	1	DTMF detection time		50ms	80ms	100ms	120ms	0		
	2		No. 1	0	0	1	1			
	3		No. 2	0	1	0	1			
	4	Protection of remote reception (5 ☒☒) detect	Yes			No			1	
	5	Remote reception with GE telephone	Compatible			Not compatible			1	
	6	Remote operation code figure by external TEL (0~9)	Binary input					0		
	7		No. = 8 4 2 1					1		
	8		5 6 7 8					0		
SW I F2	1	CNG detection in STAND-BY mode	Yes			No			1	OPTION
	2	Number of CNG detect (AM mode)		1pulse	2pulses	3pulses	4pulses	0		
	3		No. 2	0	0	1	1			
	4	Number of CNG detect (STAND-BY mode)		1pulse	2pulses	3pulses	4pulses	0		
	5		No. 4	0	0	1	1			
	6	Reserved							0	
	7	Reserved							0	
	8	Reserved							0	
SW I G1	1	Reserved						0		
	2	Reserved						0		
	3	Reserved						0		
	4	Reserved						0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
	8	Reserved						0		

SW NO.	DATA NO.	ITEM	Switch setting and function					Initial setting	Remarks	
			1		0					
SW G2	1	Reserved						0		
	2	Reserved						0		
	3	Reserved						0		
	4	Reserved						0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
	8	Reserved						0		
SW G3	1	Reserved						0		
	2	Reserved						0		
	3	Reserved						0		
	4	Reserved						0		
	5	Reserved						0		
	6	Reserved						0		
	7	Reserved						0		
	8	Reserved						0		
SW H1	1 2	Busy tone detection ON/OFF time (Lower duration)		150ms	200ms	250ms	350ms	0 1		
			No. 1	0	0	1	1			
			No. 2	0	1	0	1			
	3 4	Busy tone detection ON/OFF time (Upper duration)		650ms	900ms	1500ms	2700ms	0 1		
			No. 3	0	0	1	1			
			No. 4	0	1	0	1			
	5	Busy tone detect continuation sound detect during OGM	No			Yes			0	
	6	Busy tone detect continuation sound detect	No			Yes			0	
7	Busy tone detect intermittent sound detect during OGM	No			Yes			0		
8	Busy tone detect intermittent sound detect	No			Yes			0		
SW H2	1 2	Busy tone detection pulse number		2pulses	4pulses	6pulses	10pulses	0 1		
			No. 1	0	0	1	1			
			No. 2	0	1	0	1			
	3	Fax switching when A.M. full	Yes			No			0	OPTION
	4	Busy tone detect continuation sound detect frequency	320Hz - 570Hz			320Hz - 460Hz			0	
	5	Reserved							0	
	6	Reserved							0	
	7	AM OGM announce only mode	Yes			No			0	OPTION
8	Busy tone continuous sound detect time	5s			10s			1		
SW I1	1 2	ICM recording time		4min	15s	30s	60s	0 0	OPTION	
			No. 1	0	0	1	1			
			No. 2	0	1	0	1			
	3 4	A.M. quiet time 1		2s	3s	4s	5s	0 0		
			No. 3	0	0	1	1			
			No. 4	0	1	0	1			
	5 6	A.M. quiet time 2		0s	1s	2s	3s	1 0		
			No. 5	0	0	1	1			
			No. 6	0	1	0	1			
	7	Key input buzzer on/off switch (Two way recording mode)	On			Off			0	
8	Reserved							0		

SW NO.	DATA NO.	ITEM	Switch setting and function				Initial setting	Remarks	
			1		0				
SW I12	1	A.M. quiet detect time	Binary input				0		
	2		No. = 16 8 4 2 1				0		
	3		1 2 3 4 5				1		
	4		0 0 1 1 0				1		
	5						0		
	6	Reserved			0				
	7	Reserved			0				
	8	Reserved			0				
SW I13	1	Reserved			0				
	2	Max OGM record time	15s	60s	0				
	3	Two way record function	Disable	Enable	0	OPTION			
	4	Toll saver	Disable	Enable	0				
	5	Reserved			0				
	6	Reserved			0				
	7	Reserved			0				
	8	Transfer dial recall	No	Yes	0				
SW I14	1	AGC maximum gain (line) (10 ~ 25 dB) (1 dB step)	Binary input				0		
	2		No. = 8 4 2 1				1		
	3		1 2 3 4				0		
	4		0 1 0 1				1		
	5	AGC maximum gain (Mic) (10 ~ 25 dB) (1 dB step)	Binary input				0		
	6		No. = 8 4 2 1				1		
	7		5 6 7 8				1		
	8		0 1 1 0				0		
SW I15	1	AGC eref access code (line) (-0 ~ -30 dB) (2 dB step)	Binary input				1		
	2		No. = 8 4 2 1				0		
	3		1 2 3 4				1		
	4		1 0 1 1				1		
	5	AGC eref access code (Mic) (-0 ~ -30 dB) (2 dB step)	Binary input				1		
	6		No. = 8 4 2 1				1		
	7		5 6 7 8				0		
	8		1 1 0 1				1		
SW I16	1	AGC again adaptation threshold (line)	Binary input				1		
	2		No. = 8 4 2 1				1		
	3		1 2 3 4				1		
	4		1 1 1 1				1		
	5	AGC again adaptation threshold (Mic)	Binary input				1		
	6		No. = 8 4 2 1				1		
	7		5 6 7 8				1		
	8		1 1 1 1				1		
SW I17	1	AGC slew rate (line)		Slow	Normal	Little fast	Fast	0	
			No. 1	0	0	1	1		
			No. 2	0	1	0	1		
	3	AGC slew rate (Mic)		Slow	Normal	Little fast	Fast	1	
			No. 3	0	0	1	1		
			No. 4	0	1	0	1		
	5	Reserved					0		
	6	Reserved					0		
	7	Reserved					0		
	8	Reserved					0		

SW NO.	DATA NO.	ITEM	Switch setting and function							Initial setting	Remarks
			1			0					
SW I J1	1	Reserved								0	
	2	Reserved								0	
	3	Sender's phone number setting	Cannot change			Change allowed				0	
	4	Reserved								0	
	5	Reserved								0	
	6	Summer time setting	No			Yes				1	OPTION
	7	Ringer volume		Off	Low	Middle	High	1	OPTION		
			No. 7	0	0	1	1				
No. 8			0	1	0	1					
SW I J2	1	Reserved								0	
	2	Reserved								0	
	3	Reserved								0	
	4	Handset receiver volume		Low	Low	Middle	High	1	OPTION		
			No. 4	0	0	1	1				
			No. 5	0	1	0	1				
	6	Speaker volume (5 stages)		Very Low	Low	Middle	High	Very High	0	OPTION	
			No. 6	0	0	0	0	1			
No. 7			0	0	1	1	0				
No. 8			0	1	0	1	0				
SW I J3	1	Reserved								0	
	2	Communication results printout (Transaction report)		E/T/M	Send only	Always	No print	Err only	1	OPTION	
			No. 2	0	0	0	0	1			
			No. 3	0	0	1	1	0			
			No. 4	0	1	0	1	0			
	5	OGM/ICM output level to speaker (0 dB ~ -15 dB) (1 dB step)	Binary input							0	
	6		No. =	8	4	2	1	0			
	7			5	6	7	8	1			
8			0	0	1	1	1				
SW I K1	1	Reserved								0	
	2	Reserved								0	
	3	OGM/ICM output level (0 dB ~ -32 dB) (1 dB step)	Binary input							0	
			No. =	32	16	8	4	2	1	0	
				3	4	5	6	7	8	1	
				0	0	1	0	0	1	0	
										0	
										1	
SW I L1	1	Reserved								0	
	2	Reserved								0	
	3	Reserved								0	
	4	Reserved								0	
	5	Cut off mode (COPY mode)	Yes			No				1	OPTION
	6	A4 paper enable	Enable			Disable				0	
	7	LEGAL & LETTER paper enable	Enable			Disable				1	
	8	Reserved								0	

SW NO.	DATA NO.	ITEM	Switch setting and function						Initial setting	Remarks	
			1			0					
SW I L2		Paper set size		LETTER		LEGAL		A4		OPTION	
	1		No. 1	0		0		1	0		
	2		No. 2	0		1		0	0		
	3	Automatic reduce of receive	Auto			100 %			1	OPTION	
		Print contrast		Normal	Lighter	Light	Dark	Darker	1	OPTION	
	4		No. 4	0	0	0	0	1			
	5		No. 5	0	0	1	1	0			0
	6		No. 6	0	1	0	1	0			0
7	Reception reduction ratio in case of memory full	100 %				93 %			0		
8	Reserved							0			
SW I M1	1	Reserved							0		
	2	Reserved							0		
	3	Reserved							0		
	4	Reserved							0		
	5	Reserved							0		
	6	Reserved							0		
	7	Reserved							0		
	8	Reserved							0		
SW I M2	1	Reserved							0		
	2	Reserved							0		
	3	Reserved							0		
	4	Reserved							0		
	5	Reserved							0		
	6	Reserved							0		
	7	Reserved							0		
	8	Reserved							0		
SW I N1	1	LCR short time	Binary input						0	OPTION	
	2		No. = 32 16 8 4 2 1						0		
	3		1 2 3 4 5 6						0		
	4		0 0 0 0 1 0						0		
	5								1		
	6								0		
	7	Reserved							0		
	8	Reserved							0		
SW I N2	1	LCR long time	Binary input						0	OPTION	
	2		No. = 32 16 8 4 2 1						0		
	3		1 2 3 4 5 6						0		
	4		0 0 0 1 0 0						1		
	5								0		
	6								0		
	7	Reserved							0		
	8	Reserved							0		
SW I N3	1	LCR Time Select	Long			Short			0	OPTION	
	2	Temporary release of caller ID withhold	Yes			No			1		
	3	Connect Japanese center	Connect Japanese center			Connect USA center			0		
	4	Open LCR debug mode	Open LCR debug mode ON			Open LCR debug mode OFF			0		
		Digital line equalization setting		0km	0km	7.2km	7.2km	0			
	5	(Open LCR downloading)	No. 5	0	0	1	1				
	6		No. 6	0	1	0	1				
	7	Release code of Call ID withhold for tone or pulse line	Tone *82			Pulse 1182			1		
8	Reserved								0		

• Soft switch function description

SW-A1 No. 1 Protect from echo

Used to protect from echo in reception.

SW-A1 No. 2 Forced 4800BPS reception

When line conditions warrant that receptions take place at 4800 BPS repeatedly.

It may improve the success of receptions by setting at 4800BPS.

This improves the receiving document quality and reduces handshake time due to fallback during training.

SW-A1 No. 3 Footer print

When set to "1", the date of reception, the sender machine No., and the page No. are automatically recorded at the end of reception.

SW-A1 No. 4 Length limitation of copy/send/receive

Used to set the maximum page length.

To avoid possible paper jam, the page length is normally limited to 0.6 meter for copy or transmit, and 1 meters for receive.

It is possible to set it to "No limit" to transmit a long document, such as a computer print form, etc. (In this case, the receiver must also be set to no limit.)

SW-A1 No. 5 CSI transmission

(CSI TRANSMISSION) is a switch to set whether the machine sends or does not send the signal (CSI signal) informing its own telephone No. to the remote fax machine when information is received. When "nonsending" is set, the telephone No. is not output on the remote transmitting machine if the remote transmitting machine has the function to display or print the telephone No. of receiving machine, using this CSI signal.

SW-A1 No. 6 DIS receive acknowledgment during G3 transmission

Used to make a choice of whether reception of DIS (NSF) is acknowledged after receiving two DISs (NSFs) or receiving one DIS (two NSF's). It may be useful for overseas communication to avoid an echo suppression problem, if set to 1.

SW-A1 No. 7 Non-modulated carrier for V29 transmission mode

Though transmission of a non-modulated carrier is not required for transmission by the V29 modem according to the CCITT recommendation, it may be permitted to send non-modulated carrier before the image signal to avoid an echo suppression problem. It may be useful for overseas communication to avoid an echo suppression problem, if set to 1.

SW-A1 No. 8 EOL (End Of Line) detect timer

Used to make a choice of whether to use the 25-second or 13-second timer for detection of EOL.

This is effective to override communication failures with some facsimile models that have longer EOL detection.

SW-A2 No. 1 ~ No. 4 Modem speed

Used to set the initial modem speed. The default is 14400BPS.

It may be necessary to program it to a slower speed when frequent line fallback is encountered, in order to save the time required for fallback procedure.

SW-A2 No. 5 Sender's information transmit

(SENDER'S INFORMATION TRANSMISSION) is a switch to set the function to print the content of HEADER PRINT described in the passcode list at the front end of receiver's original when original is sent to the remote machine.

If this switch is set to "NO", the HEADER PRINT is not output at the receiving machine.

SW-A2 No. 6 Reserved

Set to "0".

SW-A2 No. 7 Communication error treatment in RTN sending mode (Reception)

Used to determine communication error treatment when RTN is sent by occurrence of a received image error in G3 reception. When it is set to "1", communication error is judged as no error.

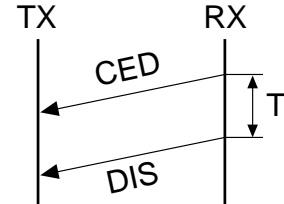
SW-A2 No. 8 CNG transmission

When set to "0", this model allows CNG transmission by pressing the Start key in the key pad dialing mode. When set to "1", CNG transmission in the key pad dialing mode cannot be performed. In either case, CNG transmission can be performed in the auto dial mode.

SW-A3 No. 1, No. 2 CED tone signal interval

For international communication, the 2100Hz CED tone may act as an echo suppression switch, causing a communication problem.

Though SW-A3 No. 1 and No. 2 are normally set to 0, this setting is used to change the time between the CED tone signal to eliminate the communication caused by echo.



SW-A3 No. 3 MR Coding

MR Coding is enable.

SW-A3 No. 4 ECM mode

Used to determine ECM mode function. Refer to following table.

SW-A3 No.4 ECM MODE		0	0	1	1
SW-A3 No.5 ECM MMR MODE		0	1	0	1
Compression method	ECM MMR mode	Yes	No	No	No
	ECM MH mode	Yes	Yes	No	No
	MR Mode	Yes	Yes	Yes	Yes

(Depending on remote machine)

SW-A3 No. 5 ECM MMR mode

See SW-A3 No. 4.

SW-A3 No. 6 ~ No. 8 Reserved

Set to "0".

SW-A4 No. 1 ~ No. 5 Signal transmission level

Used to control the signal transmission level in the range of 0dB to -31dB.

SW-A4 No. 6 Protocol monitor (Error print)

If set to "1", protocol is printed at communication error.

SW-A4 No. 7 Protocol monitor

Normally set to "0". If set to "1", communication can be checked, in case of trouble, without using a G3 tester or other tools.

When communication FSK data transmission or reception is made, the data is taken into the buffer. When communication is finished, the data is analysed and printed out. When data is received with the line monitor (SW-A4 No. 8) set to "1" the reception level is also printed out.

SW-A4 No. 8 Line monitor

Normally set to "0". If set to "1", the transmission speed and the reception level are displayed on the LCD. Used for line tests.

SW-A5 No. 1, No. 2 Digital line equalization setting (Reception)

Line equalization when reception is to be set according to the line characteristics.

Setting should be made according to distance between the telephone and the telephone company central switching station.

SW-A5 No. 3, No. 4 Digital line equalization setting (Transmission)

Line equalization when transmitter is to be set according to the line characteristics.

Setting should be made according to distance between the telephone and the telephone company central switching station.

SW-A5 No. 5, No. 6 Digital cable equalizer setting (Reception for Caller ID)

Line equalization when reception for CALLER ID is to be set according to the line characteristics.

Setting should be made according to distance between the telephone and the telephone company central switching station.

SW-A5 No. 7 Error criterion

Used to select error criterion for sending back RTN when receiving image data.

SW-A5 No. 8 Anti junk fax check

When using the Anti junk fax function, set to "1".

SW-A6 No. 1 Reserved

Set to "0".

SW-A6 No. 2 End buzzer

Setting this bit to 0 will disable the end buzzer (including the error buzzer/on-hook buzzer).

SW-A6 No. 3 Disconnect the line when DIS is received in RX mode

Bit1= 0: When DIS signal is received during RX mode, the line is disconnected immediately.

Bit1= 1: When DIS signal is received during RX mode, the line is disconnected on the next tone.

SW-A6 No. 4 Equalizer freeze control (MODEM)

This switch is used to perform reception operation by fixing the equalizer control of modem for the line which is always in an unfavorable state and picture cannot be received.

* Usually, the control is executed according to the state of line where the equalizer setting is changed always.

SW-A6 No. 5 Equalizer freeze control 7200BPS only

Setting which specifies SW-A3 No. 6 control only in the condition of 7200BPS modem speed.

SW-A6 No. 6 CNG transmission in manual TX mode

When set to "1", fax transmit the CNG signal in case of manual transmission mode (User press the START key after waiting for the fax answering signal from handset or speaker).

SW-A6 No. 7 Reserved

Set to "0".

SW-A6 No. 8 Modem speed automatic fallback when RX level is under -40dBm

When set to "1", if fax signal level is under -40dBm during reception, machine selects the slower modem speed automatically.

It is effective when noises occur on the received document due to the long distance communications.

SW-B1 No. 1 ~ No. 4 Recall interval

Choice is made for a redial interval for speed and rapid dial calls.

Use a binary number to program this. If set to 0 accidentally, 1 will be assumed.

SW-B1 No. 5 ~ No. 8 Recall times

Choice is made as to how many redials there should be.

SW-B2 No. 1 Dialing pause (sec/pause)

Pauses can be inserted between telephone numbers of direct dial connection. Selection of 4 sec or 2 sec pause is available.

SW-B2 No. 2 Dial tone detection (before auto dial)

Used to set YES/NO of dial tone detection in auto dialing.

SW-B2 No. 3 Reserved

Set to "0".

SW-B2 No. 4 Busy tone detection (after auto dial)

Used to set busy tone detection in auto dialing.

SW-B2 No. 5, No. 6 Waiting time after dialing

This is time waiting for the opponent's signals after dialing.

SW-B2 No. 7, No. 8 Reserved

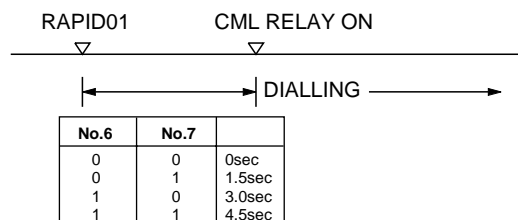
Set to "0".

SW-B3 No. 1 ~ No. 5 Reserved

Set to "0".

SW-B3 No. 6, No. 7 Auto dial mode Delay timer of before line connect

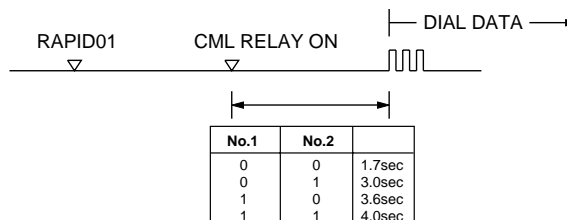
Delay time between the dial key input and line connection under the auto dial mode.

**SW-B3 No. 8 Reserved**

Set to "0".

SW-B4 No. 1, No. 2 Auto dial mode Delay timer of after line connect

Delay time between the line connection and dial data output under the auto dial mode.

**SW-B4 No. 3 Dial mode**

When using the pulse dial, set to 1. When using the tone dial, set to 0.

SW-B4 No. 4 Pulse → Tone change function by ✕ key

When setting to 1, the mode is changed by pressing the ✕ key from the pulse dial mode to the tone dial mode.

SW-B4 No. 5 Dial pulse make/break ratio (%)

When using the 33% make ratio pulse dial, set to "0".

When using the 40% make ratio pulse dial, set to "1".

SW-B4 No. 6, No. 7 Reserved

Set to "0".

SW-B4 No. 8 Recalling fixed only one time when dialing was unsuccessful without detecting busy tone signal

When dialing results in failure since the busy tone cannot be detected, recalling is fixed to one time.

Supplementary explanation

If time-out termination is made when dialing, only single recall is possible even if the setting time of recalls (SW-B1 No. 5 - No. 8) has been set to some times. This soft switch is added in order to meet FCC regulations.

SW-B5 No. 1 ~ No. 5 DTMF signal transmission level (Low)

The transmission level of DTMF signal is adjusted. (lower frequency)

00000: 0dBm

↓

11111: -15.5dBm (-0.5dBm x 31)

SW-B5 No. 6 ~ No. 8 Reserved

Set to "0".

SW-B6 No. 1 ~ No. 5 DTMF signal transmission level (High)

The transmission level of DTMF signal is adjusted. (higher frequency)

00000: 0dBm

↓

11111: -15.5 dBm (-0.5dBm x 31)

SW-B6 No. 6 Dial tone detection (LCR center call)

Used to set YES/NO of dial tone detection (calling LCR center).

SW-B6 No. 7, No. 8 Reserved

Set to "0".

SW-C1 No. 1, No. 2 Reading slice (Binary)

Used to determine the set value of reading density in standard/fine mode. The standard setting is "00" (Factory setting is "00")

SW-C1 No. 3, No. 4 Reading slice (Half tone)

Used to determine the set value of reading density in half tone mode. The standard setting is "00" (Factory setting is "00")

SW-C1 No. 5 Line density selection

Used to set the transmission mode which is automatically selected when the Resolution key is not pressed. In the copy mode, however, the fine mode is automatically selected unless the Resolution key is manually set to another mode.

SW-C1 No. 6 Reserved

Set to "0".

SW-C1 No. 7 MTF correction in half tone mode

This allows selection of MTF correction (dimness correction) in the half tone mode.

When "NO" (=1) is selected, the whole image becomes soft and mild. Clearness of characters will be reduced. Normally set to "YES" (=0).

SW-C1 No. 8 Reserved

Set to "0".

SW-D1 No. 1 ~ No. 4 Number of rings for auto receive

When the machine is set in the auto receive mode, the number of rings before answering can be selected. It may be set from one to four rings using a binary number. Since the facsimile telephone could be used as an ordinary telephone if the handset is taken off the hook, it should be programmed to the user's choice. If the soft switch was set to 1, direct connection is made to the facsimile. If a facsimile calling beep was heard when the handset is taken off the hook, press the START key and put the handset on the hook to have the facsimile start receiving. If it was set to 0 accidentally, receive ring is set to 1.

NOTE: If the machine is set to answer after a large number of rings, it may not be able to receive faxes successfully. If you have difficulty receiving faxes, reduce the number of rings to a maximum of 6.

SW-D1 No. 5 Automatic switching manual to auto receive mode

This soft switch is used to select whether the machine should switch to the auto receive mode after 5 rings in the manual receive mode or remain in the same way as SW-D1 No. 1, No. 2, No. 3 and No. 4 "0"1"0"1"(5 rings).

SW-D1 No. 6 Reserved

Set to "0".

SW-D1 No. 7, No. 8 CI detect frequency

Detection frequency of ring signal for auto reception is set.

When set to No. 6=0, No. 7=0, frequency is set to PTT recommendation.

When set to No. 6=0, No. 7=1, frequency is set to 11.5Hz or more.

When set to No. 6=1, No. 7=0, frequency is set to 13.0Hz or more.

When set to No. 6=1, No. 7=1, frequency is set to 20.0Hz or more.

SW-D2 No. 1 ~ No. 3 Distinctive ringing setting (PATTERN 4 and 5 are for CANADA only)

This function allows reception of services offered by USA and Canada telephone companies in which the customer contracts with the telephone company to have up to 4 telephone numbers (USA) or 6 telephone numbers (Canada) established for one line.

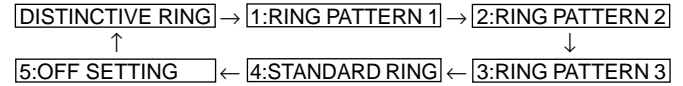
Each telephone number is signalled by a different ringing pattern, and the customer can allocate each number to a specific use.

<Example of use>

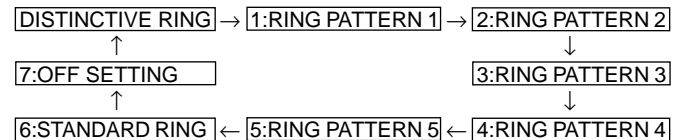
	Phone Number	Intended Purpose	Ring Pattern
Ring Pattern	555-1234	Voice Calls	Standard
	555-1235	Facsimile Calls	Pattern 1
	555-1236	Answering Machine	Pattern 2
	555-1237	PC Modem	Pattern 3

<Distinctive Ringing Timing Specifications>

1) USA



2) Canada



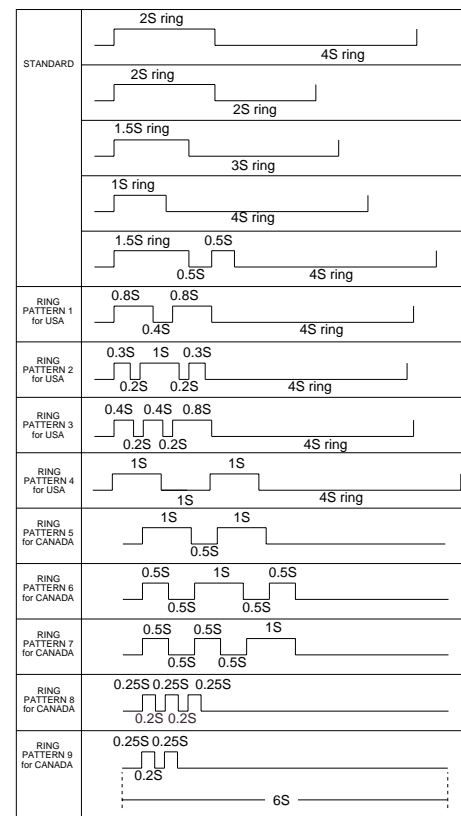
• Ring Pattern

STANDARD has 5 ring patterns, and DISTINCTIVE has 9 patterns. Ring patterns ①~④ for USA, and ⑤~⑨ for Canada.

However, to make the setting procedure as easy as possible for the user to understand these patterns are grouped as follows:

<Optional Setting>

1) RING PATTERN 1	RING PATTERN ① for USA
	RING PATTERN ④ for USA
	RING PATTERN ⑤ for Canada
2) RING PATTERN 2	RING PATTERN ② for USA
	RING PATTERN ⑥ for Canada
3) RING PATTERN 3	RING PATTERN ③ for USA
	RING PATTERN ⑦ for Canada
4) RING PATTERN 4	RING PATTERN ⑧ for Canada
5) RING PATTERN 5	RING PATTERN ⑨ for Canada
6) STANDARD RING	
7) OFF SETTING	



SW-D2 No. 4 Reserved

Set to "0".

SW-D2 No. 5 Caller ID function

Used for Caller ID function.

SW-D2 No. 6 Caller ID detect during CI off

Detection of caller ID signal is performed as follows:

0:First CI OFF only

1:All of CI OFF

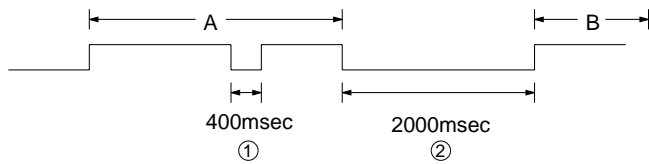
SW-D2 No. 7, No. 8 Reserved

Set to "0".

SW-D3 No. 1 ~ No. 5 CI off detection timer (0-1550ms setting by 50ms step)

Set the minimum time period of CI signal interruption.

(Example)



01110 (50ms ~ 14):

700ms (CI interruption>700ms:Judged as a CI OFF section)

The section 1 is not judged as a CI OFF section, the CI signal A is counted as one signal.

The section 2 is judged as a CI OFF section, the CI signal B is considered as the second signal.

00111 (50ms ~ 7):

350ms (CI interruption>350ms:Judged as a CI OFF section)

The section 1 is judged as a CI OFF section, and the CI signal A is counted as two signals.

The section 2 is judged as a CI OFF section, and the CI signal B is considered as the third signal.

SW-D3 No. 6 ~ No. 8 Reserved

Set to "0".

SW-E1 No. 1 ~ No. 8 Reserved

Set to "0".

SW-E2 No. 1 ~ No. 8 Reserved

Set to "0".

SW-E3 No. 1 ~ No. 8 Reserved

Set to "0".

SW-F1 No. 1, No. 2 DTMF detect time

Used to set detect time of DTMF (Dual Tone Multi Frequency) used in remote reception (5 × × ×).

The longer the detect time is, the less the error detection is caused by noises.

SW-F1 No. 3 Protection of remote reception (5 × × ×) detect

Used to set the function of remote reception (5 × × ×). When set to "1", the remote reception function is disabled.

SW-F1 No. 4 Remote reception with GE telephone

(Corresponding to TEL made by GE) P. B. X.

"1": Compatible with TEL made by GE

"0": Not compatible

- When sending (5 × × ×) for remote reception with a GE manufactured telephone remote reception may not take place because of special specifications in their DTMF.
To overcome this, a soft SW is provided to change the modem setting to allow for remote reception.

- If this soft SW is set to "1", other telephone sets may be adversely affected.

SW-F1 No. 5 ~ No. 8 Remote operation code figure by external TEL (0 ~ 9)

Remote operation codes can be changed from 0 through 9. If set to greater than 9, it defaults to 9. The "5 × × × " is not changed.

Ex-7 × × × (Default: 5 × × ×)

SW-F2 No. 1 CNG detection in STAND-BY mode

When setting to "1", the CNG signal detection function during standby stops.

SW-F2 No. 2, No. 3 Number of CNG detect (AM mode)

Used for detection of CNG in 1 to 4 pulses.

SW-F2 No. 4, No. 5 Number of CNG detect (STAND-BY mode)

Used for detection of CNG in 1 to 4 pulses.

SW-F2 No. 6 ~ No. 8 Reserved

Set to "0".

SW-G1 No. 1 ~ No. 8 Reserved

Set to "0".

SW-G2 No. 1 ~ No. 8 Reserved

Set to "0".

SW-G3 No. 1 ~ No. 8 Reserved

Set to "0".

SW-H1 No. 1, No. 2 Busy tone detection ON/OFF time (Lower duration)

The initial value of detection is set according to electric condition.

The set value is changed according to the local switch board. (Erroneous detection of sound is reduced.)

Normally the upper limit is set to 900msec, and the lower limit to 200msec.

If erroneous detection is caused by sound, etc., adjust the detection range.

The lower limit can be set in the range of 350msec to 150msec.

SW-H1 No. 3, No. 4 Busy tone detection ON/OFF time (Upper duration)

Similarly to SW-H1 No. 1, the set value can be varied.

The upper limit can be set in the range of 650msec to 2700msec.

SW-H1 No. 1	SW-H1 No. 2	SW-H1 No. 3	SW-H1 No. 4	Detection range
0	0	0	0	150msec ~ 650msec
0	0	0	1	150msec ~ 900msec
0	0	1	0	150msec ~ 1500msec
0	0	1	1	150msec ~ 2700msec
0	1	0	0	200msec ~ 650msec
0	1	0	1	200msec ~ 900msec
0	1	1	0	200msec ~ 1500msec
0	1	1	1	200msec ~ 2700msec
1	0	0	0	250msec ~ 650msec
1	0	0	1	250msec ~ 900msec
1	0	1	0	250msec ~ 1500msec
1	0	1	1	250msec ~ 2700msec
1	1	0	0	350msec ~ 650msec
1	1	0	1	350msec ~ 900msec
1	1	1	0	350msec ~ 1500msec
1	1	1	1	350msec ~ 2700msec

SW-H1 No. 5 Busy tone detect continuation sound detect during OGM

Used to detect the continuous tone of specific frequency during OGM output.

SW-H1 No. 6 Busy tone detect continuation sound detect

Used to select detection of the continuous sound of certain frequency.

SW-H1 No. 7 Busy tone detect intermittent sound detect during OGM

Used to detect the intermittent tone of specific frequency during OGM output.

SW-H1 No. 8 Busy tone detect intermittent sound detect

Used to select detection of the intermittent sound of certain frequency.

SW-H2 No. 1, No. 2 Busy tone detection pulse number

Used to set detection of Busy tone intermittent sounds.

SW-H2 No. 3 Fax switching when A.M. full

If the answering machine's memory is full and there is no response, the machine automatically switches to Fax reception.

SW-H2 No. 4 Busy tone detect continuation sound detect frequency

Set detecting frequency of busy tone continuation sound for 320 ~ 570 Hz of 320 ~ 460 Hz.

SW-H2 No. 5, No. 6 Reserved

Set to "0".

SW-H2 No. 7 AM OGM announce only mode

If this switch is set to 1, the machine will not record ICM. (disconnect the line after OGM output)

SW-H2 No. 8 Busy tone continuous sound detect time

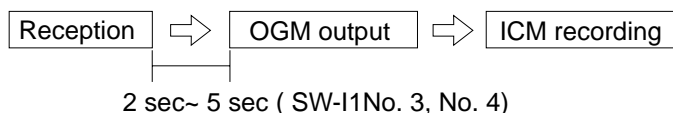
Set detecting time busy tone continuous sound for 5 or 10 seconds.

SW-I1 No. 1, No. 2 ICM recording time

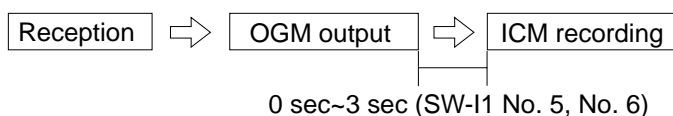
Used to select the incoming message recording time to 15sec/30sec/60sec/4min.

SW-I1 No. 3, No. 4 A.M. quiet time 1

Used to select four kinds of no sound time (2 sec ~ 5 sec) after reception in the T.A.D mode until OGM is output.

**SW-I1 No. 5, No. 6 A.M. quiet time 2**

Used to select four kinds of no sound time (0 sec ~ 3 sec) after OGM output the T.A.D mode until ICM recording is started.

**SW-I1 No. 7 Key input buzzer on/off switch (Two way recording mode)**

Used to turn ON/OFF key input buzzer in the TWO-WAY recording mode.

SW-I1 No. 8 Reserved

Set to "0".

SW-I2 No. 1 ~ No. 5 A.M. quiet detect time

Used to set no sound time (0 sec ~ 32 sec) during the T.A.D. mode operation.

SW-I2 No. 6 ~ No. 8 Reserved

Set to "0".

SW-I3 No. 1 Reserved

Set to "0".

SW-I3 No. 2 Max OGM record time

Used select the outgoing message recording time to 60sec or 15sec.

SW-I3 No. 3 Two way record function

If this switch is set to "1", the machine disables two way recording.

SW-I3 No. 4 Toll saver

Used to turn on the toll saver function. If it is off, the reception frequency in the AM mode is identical with that in the FAX mode.

SW-I3 No. 5 ~ No. 7 Reserved

Set to "0".

SW-I3 No. 8 Transfer dial recall

If this switch is set to "1", machine disables redial in Transfer function.

SW-I4 No. 1 ~ No. 4 AGC maximum gain (Line) (10 ~ 25dB) (1dB step)

The AGC Maximum Gain limits the gain applied by the AGC. Messages with average energy below the AGC Energy Reference Level will have their average energy level increased by no more than the AGC Maximum Gain. The AGC Maximum Gain should average energy of the message with the lowest average energy to the AGC Energy Reference Level.

SW-I4 No. 5 ~ No. 8 AGC maximum gain (Mic) (10 ~ 25dB) (1dB step)

The AGC Maximum Gain limits the gain applied by the AGC. Messages with average energy below the AGC Energy Reference Level will have their average energy level increased by no more than the AGC Maximum Gain. The AGC Maximum Gain should average energy of the message with the lowest average energy to the AGC Energy Reference Level.

SW-I5 No. 1 ~ No. 4 AGC eref access code (Line) (-0 ~ -30dB) (2dB step)

The AGC Energy Reference Level controls the playback level. Any message having average speech energy above the energy reference level has its playback level attenuated, and any level has its playback level increased. If the playback level is too high (low), then decreasing (increasing) the AGC Energy Reference Level will achieve the desired level.

SW-I5 No. 5 ~ No. 8 AGC eref access code (Mic) (-0 ~ -30dB) (2dB step)

The AGC Energy Reference Level controls the playback level. Any message having average speech energy above the energy reference level has its playback level attenuated, and any level has its playback level increased. If the playback level is too high (low), then decreasing (increasing) the AGC Energy Reference Level will achieve the desired level.

SW-I6 No. 1 ~ No. 4 AGC gain adaptation threshold (Line)

The AGC adjusts the amount of gain applied to the incoming message only when the average energy exceeds the AGC Gain Adaptation Threshold. The AGC Gain Adaptation Threshold prevents message background noise from corrupting the gain provided that the AGC Gain Adaptation Threshold is greater than the background noise energy. In the event that a message has background noise energy greater than the AGC Gain Adaptation Threshold, the AGC Gain can be no greater than the AGC Maximum Gain. Note that the AGC Gain Adaptation Threshold must always be greater than the RPACS VOX Turn-On Threshold.

SW-I6 No. 5 ~ No. 8 AGC gain adaptation threshold (Mic)

The AGC adjusts the amount of gain applied to the incoming message only when the average energy exceeds the AGC Gain Adaptation Threshold. The AGC Gain Adaptation Threshold prevents message background noise from corrupting the gain provided that the AGC Gain Adaptation Threshold is greater than the background noise energy. In the event that a message has background noise energy greater than the AGC Gain Adaptation Threshold, the AGC Gain can be no greater than the AGC Maximum Gain. Note that the AGC Gain Adaptation Threshold must always be greater than the RPACS VOX Turn-On Threshold.

SW-I7 No. 1, No. 2 AGC slew rate (Line)

The AGC Slew Rate controls the convergence of the message playback level to the desired playback level. A large slew rate will allow faster convergence and a small slew rate will allow slower convergence.

SW-I7 No. 3, No. 4 AGC slew rate (Mic)

The AGC Slew Rate controls the convergence of the message playback level to the desired playback level. A large slew rate will allow faster convergence and a small slew rate will allow slower convergence.

SW-I7 No. 5 ~ No. 8 Reserved

Set to "0".

SW-J1 No. 1, No. 2 Reserved

Set to "0".

SW-J1 No. 3 Sender's phone number setting

Used to make a choice of whether the registered sender's phone number can be changed or not. If the switch is set to "1", new registration of the sender's phone number is disabled to prevent accidental wrong input.

SW-J1 No. 4, No. 5 Reserved

Set to "0".

SW-J1 No. 6 Summer time setting

This is used to set YES/NO of automatic clock adjustment for daylight saving time.

SW-J1 No. 7, No. 8 Ringer volume

Used to adjust ringing volume.

SW-J2 No. 1 ~ No. 3 Reserved

Set to "0".

SW-J2 No. 4, No. 5 Handset receiver volume

Used to adjust the a handset receiver volume.

SW-J2 No. 6 ~ No. 8 Speaker volume (5 stages)

Used to adjust sound volume from a speaker.

SW-J3 No. 1 Reserved

Set to "0".

SW-J3 No. 2 ~ No. 4 Communication result printout (Transaction report)

Every communication, the result can be output. As usual, it is set to print the timer sending communication error alone. If No. 2: 0 No. 3: 1 No. 4: 0 are set, printing is always on (printed even if it is normally ended).

000: Error, timer and memory sending/receiving

001: Sending

010: Continuous printing

011: Not printed

100: Communication error

SW-J3 No. 5 ~ No. 8 OGM/ICM output level to speaker (0dB ~ -15dB) (1dB step)

Used to control OGM and ICM output level to speaker.

SW-K1 No.1, No. 2 Reserved

Set to "0".

SW-K1 No. 3 ~ No. 8 OGM/ICM output level to Line (0dB ~ -32dB) (1dB step)

Used to control OGM and ICM output level to Line.

SW-L1 No. 1 ~ No. 4 Reserved

Set to "0".

SW-L1 No. 5 Cut off mode (COPY mode)

Whether the excessive part is printed on the next recording paper or discarded is selected to copy a document which is longer than the recording paper.

SW-L1 No. 6 A4 Paper enable

The use of recording paper of A4 is enabled.

SW-L1 No. 7 LEGAL and LETTER paper enable

The use of recording paper of LEGAL and LETTER is enabled.

SW-L1 No. 8 Reserved

Set to "0".

SW-L2 No. 1, No. 2 Paper set size

At present size of the recording paper.

SW-L2 No. 3 Automatic reduce of receive

If set to 1, it is reduced automatically when receiving.

SW-L2 No. 4 ~ No. 6 Print contrast

Used for adjustment of print contrast.

SW-L2 No. 7 Reception reduction ratio in case of memory full

This model is designed so that the print is started according to the setting of SW-L2 No.3 when reception of one page is completed. However, if the memory is filled with data before completion of reception of one page, the print is started with the reduction ratio which is set with this switch.

SW-L2 No. 8 Reserved

Set to "0".

SW-M1 No. 1 ~ No. 8 Reserved

Set to "0".

SW-M2 No. 1 ~ No. 8 Reserved

Set to "0".

SW-N1 No. 1 ~ No. 6 LCR short time

First time setting transmitting to the Open LCR center.

SW-N1 No. 7, No. 8 Reserved

Set to "0".

SW-N2 No. 1 ~ No. 6 LCR long time

Second time setting transmitting to the Open LCR center.

SW-N2 No. 7, No. 8 Reserved

Set to "0".

SW-N3 No. 1 LCR Time Select

Used to select LCR short time or LCR long time.

0:LCR short time is selected.

1:LCR long time is selected.

SW-N3 No. 2 Temporary release of caller ID withhold

Used to do temporary release of caller ID withhold.

0:Normal dialing.

1:Release of caller ID withhold before dialing.

SW-N3 No. 3 Connect Japanese center

Used to connect Japanese open LCR center.

0:Connect USA open LCR center.

1:Connect Japanese open LCR center.

SW-N3 No. 4 Open LCR debug mode

Used to debug open LCR function.

0:Normal mode.

1:debug mode.

SW-N3 No. 5, No.6 Digital line equalization setting (Open LCR downloading)

Line equalization when Open LCR downloading is to be set according to the line characteristics. Setting should be made according to distance between the telephone and the telephone company central switching station.

SW-N3 No. 7 Release code of Caller ID withhold for tone or pulse line.

Used to connect Open LCR server.

"0": *82 (for TONE)

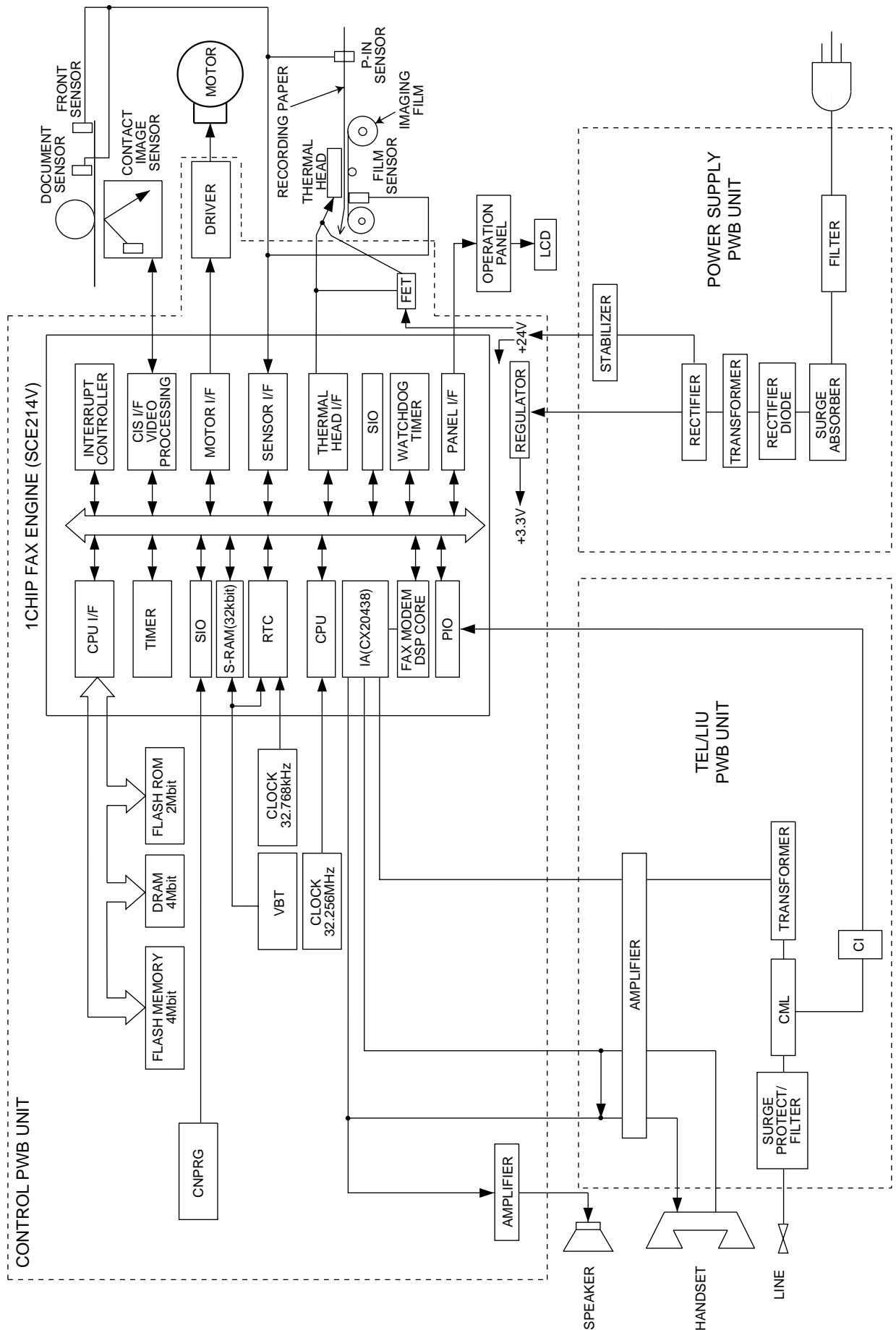
"1": 1182 (for PULSE)

SW-N3 No. 8 Reserved

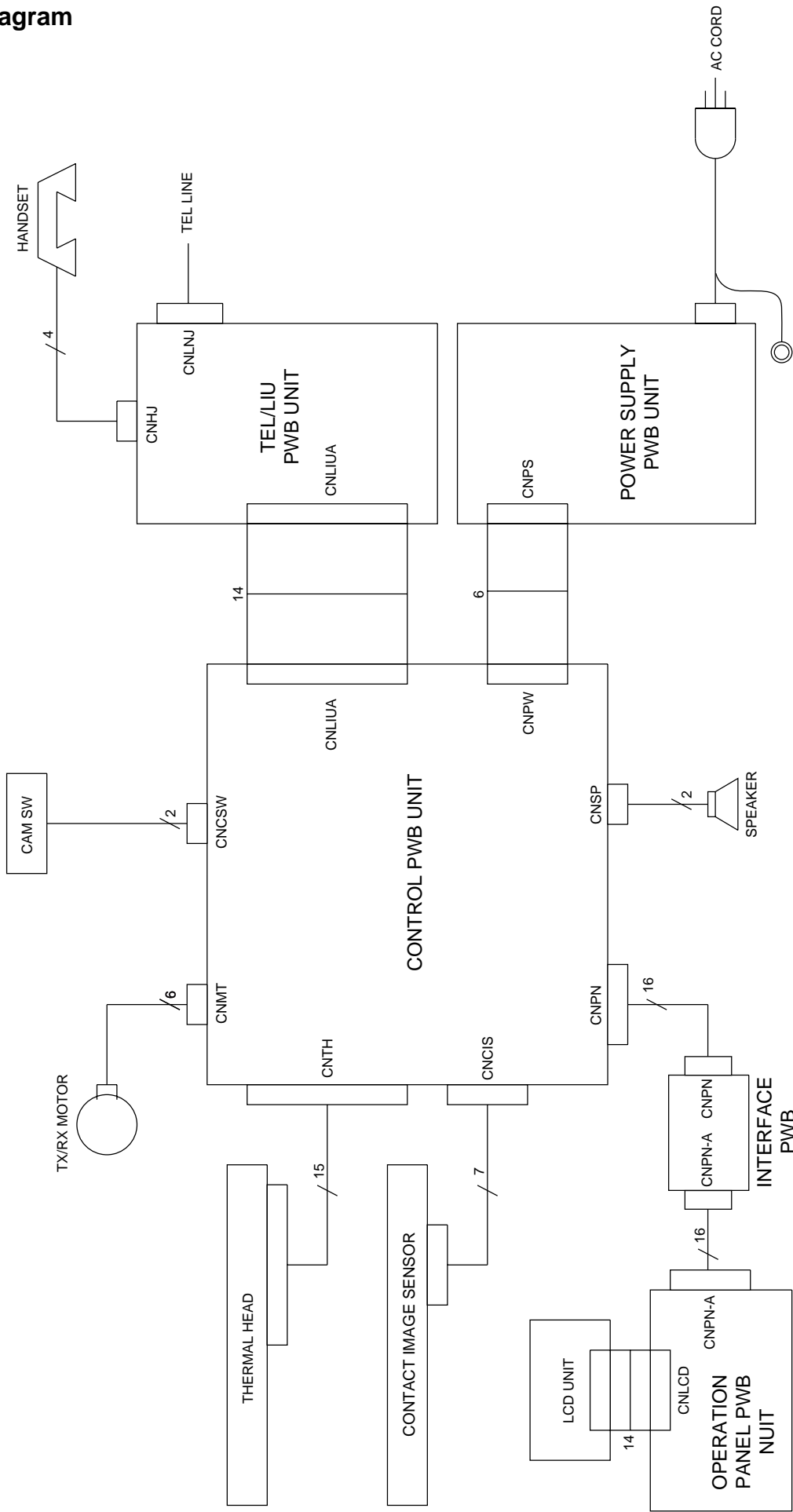
Set to "0".

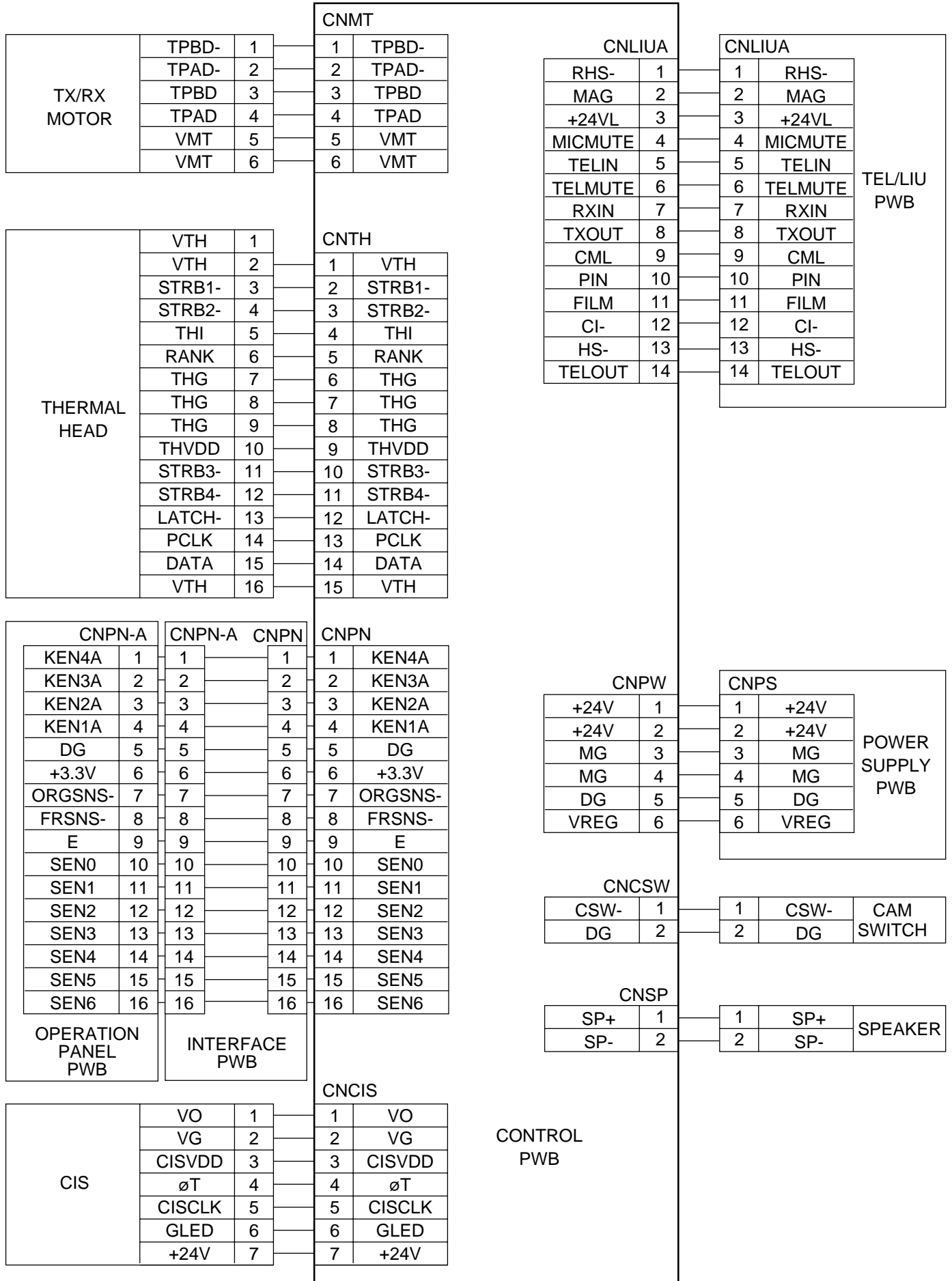
CHAPTER 4. DIAGRAMS

[1] Block diagram



[2] Wiring diagram



[3] Point-to-point diagram

CHAPTER 5. CIRCUIT DESCRIPTION

[1] Circuit description

1. General description

The compact design of the control PWB is obtained by using CONEXANT fax engine in the main control section and high density printing of surface mounting parts. Each PWB is independent according to its function as shown in Fig. 1.

2. PWB configuration

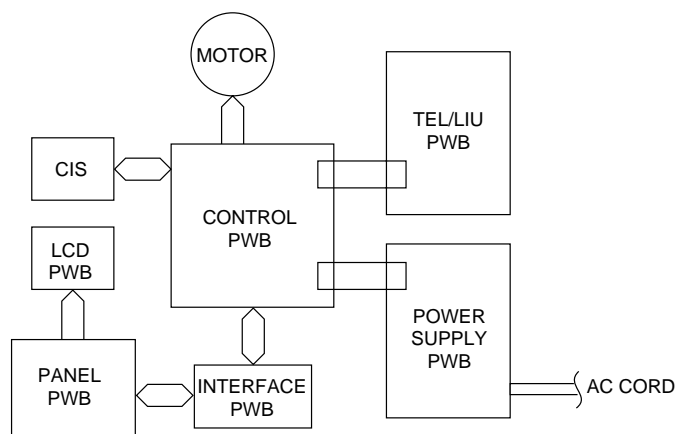


Fig. 1

1) Control PWB

The control PWB controls peripheral PWBs, mechanical parts, transmission, and performs overall control of the unit. This machine employs a 1-chip modem (SCE214V) which is installed on the control PWB.

2) TEL/LIU PWB

This PWB controls connection of the telephone line to the unit.

3) Power supply PWB

This PWB provides voltages of Vreg(+5V) and +24V to the other PWBs.

4) Panel PWB

The panel PWB allows input of the operation keys.

5) LCD PWB

This PWB controls the LCD display.

6) Interface PWB

This PWB connect control PWB with panel PWB.

3. Operational description

Operational descriptions are given below:

- Transmission operation

When a document is loaded in stand-by mode, the state of the document sensor is sensed via the 1 chip fax engine (SCE214V). With depression of the START key in the off-hook state, transmission takes place. Then, the procedure is sent out from the modem and the motor is rotated to move the document down to the scan line. In the scan processor, the signal scanned by the CIS is sent to the internal image processor and the AD converter to convert the analog signal into binary data. This binary data is transferred from the scan processor to the image buffer within the RAM and encoded and stored in the transmit buffer of the RAM. The data is then converted from parallel to serial form by the modem where the serial data is modulated and sent onto the line.

- Receive operation

There are two ways of starting reception, manual and automatic. Depression of the START key in the off-hook mode in the case of manual receive mode, or CI signal detection by the LIU in the automatic receive mode.

First, the SCE214V controls the procedure signals from the modem to be ready to receive data. When the program goes into phase C, the serial data from the modem is converted to parallel form in the modem interface of the 1 chip fax engine (SCE214V) which is stored in the receive buffer of the RAM. The data in the receive buffer is decoded software-wise to reproduce it as binary image data in the image buffer. The data is DMA transferred to the recording processor within the SCE214V which is then converted from parallel to serial form to be sent to the thermal head. The data is printed line by line by the SCE214V which is assigned to control the motor rotation and strobe signal.

- Copy operation

To make a copy on this facsimile, the COPY key is pressed when the machine is in stand-by with a document on the document table and the telephone set is in the on-hook state. First, depression of the COPY key advances the document to the scan line. Similar to the transmitting operation, the image signal from the CIS is converted to a binary signal in the DMA mode via the 1 chip fax engine (SCE214V) which is then sent to the image buffer of the RAM. Next, the data is transferred to the recording processor in the DMA mode to send the image data to the thermal head which is printed line by line. The copying takes place as the operation is repeated.

[2] Circuit description of control PWB

1. General description

Fig. 2 shows the functional blocks of the control PWB, which is composed of 4 blocks.

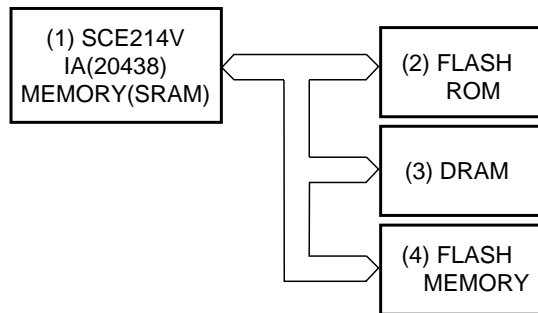


Fig. 2 Control PWB functional block diagram

2. Description of each block

(1) Main control block

The main control block is composed of CONEXANT 1 chip fax engine (SCE214V), FLASH ROM (2Mbit), DRAM (4Mbit) and FLASH MEMORY (4Mbit).

Devices are connected to the bus to control the whole unit.

1) SCE214V (IC3) : pin-176 QFP (FAX CONTROLLER)

1 chip fax engine has Internal Integrated Analog (20438) and Internal memory (SRAM : 32kbit).

2) SST39VF020P (IC1): pin-32 TSOP (FLASH ROM)

FLASH of 2Mbit equipped with software for the main CPU.

3) MSM51V4800E (IC2): pin-28 SOJ (DRAM)

- Image memory for recording process.
- Memory for openLCR function.

4) K9F4008W0A (IC8): pin-44 TSOP (FLASH MEMORY)

A 512 k x 8bit NAND FLASH MEMORY to store the voice and image data when using memory function.

(2) IC3 (SCE214V) Hardware description

A) CONTROL BLOCK

1) Integrated Controller (SCC)

The Controller contains an internal MC24 Processor with a 16-MB address space and dedicated circuitry optimized for facsimile image processing and monitoring and for thermal or thermal transfer printer support.

The CPU provides fast instruction (up to 10 MHz clock speed) execution and memory efficient input/output bit manipulation. The CPU connects to other internal functions over an 8-bit data bus and 24-bit address bus and dedicated control lines.

The 24-bit external address bus, 8-bit data bus, control, status and decoded chip select signals support connection to external ROM, SRAM, DRAM, and FLASH memory.

2) DRAM Controller

The CX06835 includes a DRAM controller with signal and page mode access support which supports fast, normal, or slow refresh time. DRAM memory space is provided in one block up to 4 MB. A maximum of 4 MB of DRAM is supported. This space has a programmable size and starting address. Refresh is performed automatically and is supported in standby mode. CAS and RAS signal support is provided for one-DRAM banks for both 4-bit and 8-bit organizations. Access speeds from 50ns to 70ns can be supported.

3) DMA Channels

Six internal DMA channels support memory access for scanner, T.4/T.6, and resolution conversion. DMA Channel 2 can be reprogrammed for external access to thermal printing, thermal transfer, or plain paper inkjet printing.

4) External RAM and ROM

Moveable and programmable size external SRAM memory of up to 1 MB, DRAM memory of up to 4 MB, and ROM of up to 2 MB can be directly connected to the SCE214V. By using an external address decoder, the size of SRAM and/or ROM can be extended. The ROM stores all the program object code.

5) Flash Memory Controller

The SCE214V includes a flash memory controller that supports NOR, NAND, and Serial NAND-type flash memory. The supported size of NOR-type memory is up to 1 MB and the supported size of NAND-type memory is unlimited.

6) Stepper Motor Control

Eight outputs are provided to external current drivers: four to the scanner motor and four to the printer motor. The stepping patterns are programmable and selectable line times are supported. A timeout circuit controls the power control of the motors. The printer or scanner motor outputs can be programmed as GPOs for applications using single motor or paper printers.

7) T.4/T.6 Compressor/Decompressor

MH, MR and MMR compression and decompression are provided in hardware. T.4 line lengths of up to 8192 pixels are supported. MMR and Alternating Compression/Decompression (ACD) on a line by line basis provide support for up to three independent compression and decompression processes.

8) Bi-level Resolution Conversion

One independent programmable bi-level 1D-resolution conversion block is provided to perform expansion or reduction on the T.4 decompressed data and scan image data. Image expansion can be programmed up to 200% and reduction down to 33%. Vertical line ORing and data output bit order reversal is also provided.

9) Printer IF

The Printer Interface provides a standard connection between the SCE214V and a thermal printhead to support thermal printing or thermal transfer. The thermal printer interface consists of programmable data, latch, clock, and up to four strobe signals. Programmable timing supports traditional thermal printers, as well as the latchless split mode printers, and line lengths of up to 2048 pixels. Line times from 5 ms to 40 ms are supported.

The SCE214V includes a thermal ADC (TADC) function utilizing a D/A converter and a comparator to monitor the printhead temperature. External terminating resistors must be supplied; the values are determined by the specific printhead selected.

As an option, plain paper inkjet printing can be supported.

10) TPH Hardware Timer

The TPH hardware timer provides a 500 ms timer that can be re-triggered or reset.

11) Scanner and Video Control

Five programmable control and timing signals support common CCD and CIS scanners. The video control function provides signals for controlling the scanner and for processing its video output. Three programmable control signals (START, CLK1n, and CLK2) provide timing related to line and pixel timing. These are programmable with regard to start time, relative delay and pulse width.

Two video control output signals (VIDCTL[1:0]) provide digital control for external signal pre-processing circuitry. These signals provide a per pixel period, or per line period, timing with programmable polarity control for each signal.

12) Video Processing

The CX06835 supports two modes of shading correction for scanner data non-uniformity arising from uneven sensor output or uneven illumination. Corrections are provided on either an 8-pixel group or are applied separately to each pixel. Dark level correction and gamma correction are also provided.

Two-dimensional Error Diffusion/Dithering is performed on halftone images.

The CX06835 includes an 8 x 8 dither table, which is programmable and stored internally (8-bit per table entry). The table is arranged in a matrix of 8 rows by 8 columns. The video processing circuit provides mixed-mode detection/processing and multi-level Resolution Conversion for the scanner multi-level data. The conversion ratio of the multi-level Resolution Conversion is fixed to B4-A4 conversion.

13) Operator Panel Interface

Operation Panel functions are supported by the operator output bus OPO[6:0], the operator input bus OP[3:0], and two control outputs (LCDCS and LEDCTRL).

The CX06835 can directly interface to a 28-key keypad.

A 2-line LCD display module with 20 characters per line can be supported.

14) Synchronous Serial Interface (SSIF)

One or optionally two Synchronous only Serial Interfaces (SSIF) are built into the CX06835, which allows it to communicate with external peripherals. Each SSIF provides separate signals for Data (SSTXD, SSRXD), Clock (SSCLK), and Status (SSSTAT). Each SSIF is a duplex, three-wire system. The SSIF may be configured to operate as either a master or a slave interface. The bit rate, clock polarity, clock phase, and data shifting order are programmable.

15) Synchronous/Asynchronous Serial Interface (SASIF)

One or optionally two Synchronous/Asynchronous Serial Interface (SASIF) performs the following:

- Serial-parallel conversion of data received from a peripheral device.
- Parallel-to-serial conversion of data for transmission to a peripheral device.

This interface consists of serial transmit data (SASTXD), serial receive data (SASRXD), and a serial clock(SASCLK). The SASIF includes a programmable bit rate generator for asynchronous and synchronous operations. The data shifting order, data bit number, and the SASCLK polarity are programmable.

The optional SASIF 2 has an additional pin called DSS_AVAIL. This signal can be used to tristate the SASCLK2 and SASTXD2 signals.

16) Real Time Clock (RTC)

The CX06835 includes a battery backup real time clock. The RTC will automatically maintain the proper date and time for 32 years. Leap year compensation is included. A 32.768 kHz or 65.536 kHz crystal is required by the RTC.

17) Tone Generator (ALT_TONE)

The CX06835 provides a programmable tone generator output. The frequency of the tone generator is programmable from 400 Hz to 4 kHz. By using a PWM programmable high frequency as a modulation frequency, the output level can be made programmable.

18) Watchdog Timer

The Programmable Watchdog Timer is intended to guard against firmware lockup on the part of either executive-controlled background tasks or interrupt-driven tasks, and can only be enabled by a sequence of events under control of the Watchdog Control Logic. Once the Watchdog Timer has been enabled, it can not be disabled unless a system reset occurs.

19) Reset and Power Control

The RESETn I/O pin provides an internally generated reset output to external circuits, or it can accept an externally generated reset signal. This reset signal will not reset the RTC. Separate RTC battery power inputs are provided for battery-backup functions. A BATRSTn pin is provided, which resets the RTC circuits and other SCC circuits.

20) Power Up/Down Control

Power Up/Down detection is provided internally. The threshold voltages are:

- Power Up detection level = 2.83V to 2.95V.

An internally generated power down signal controls internal switching between primary and battery power. This control signal is also provided as an output on the PWRDWNn pin. An externally generated power down detector (optional) can be provided as an input on the PWRDWNn pin by setting the INTPWRDWNEn pin.

21) Stand-by and Sleep Modes

Two power saving modes are provided to reduce the power consumption. In stand-by mode, the CPU is functional, but the modem clock is turned off to save power. When this occurs, the modem may be activated by software under different conditions. In sleep mode, the clock is cut off from both the modem and the CPU to increase the power savings.

The system can be activated by paper insertion, key pressing events, and telephone ring detection.

22) Embedded Modem DSP

The embedded modem DSP is a synchronous 9600 bps half-duplex modem with error detection and DTMF generation/reception. It provides data transmission/reception from regular PSTN lines, PBX, or private lines.

The modem can operate at any standard V.29 data speed up to 9600 bps as well as in V.21 and V.23 modes.

The modem is designed for use in Group 3 facsimile machines. It satisfies the requirements specified in ITU-T recommendations V.29, V.27ter, V.21 Channel 2, and T.4, and meets the signaling requirements of T.30. It also performs HDLC framing according to T.30 at all speeds.

Note: For technical details, refer to the FM209/FM214 Designer's Guide, (document 1175).

23) Software and Firmware Support Features

Available software and embedded firmware provides the following:

- Modem support for speeds up to 9600 bps.
- ECM under conditional assembly.
- DRAM memory support under conditional assembly.
- MH, MR and MMR support.
- Page memory receiving.
- 5ms minimum scan line time.
- Conditional Error Diffusion or Dither table (8x8) support.
- Dark Level Correction support.
- Single motor support.
- 28-key operator panel support.
- Call progress support for Europe and U.S.A.
- Monochrome inkjet print engine support.

B) Modem block

1) Facsimile Modem

The modem can operate at 14400, 12000, 9600, 7200, 4800, 2400, or 300 bps, and can perform HDLC framing per T.30 at all rates. A programmable DTMF detector, three programmable tone detectors, V.21 Channel 2 FSK 7E flag detector, Caller ID demodulator and ring detector are provided.

2) Voice and Audio Codecs

The voice coder/decoder (codec) compresses voice at an average rate of 2.9 kbps which provides 24 minutes of stored voice messages in 4 Mbits of memory. But for UX-A255U, a part of memory is used for other usages. So the total recording time is shortened at about 20 minutes. This voice codec allows the host controller to efficiently store and playback digital incoming messages (ICMs), outgoing messages (OGMs).

The ADPCM audio codec compresses audio signals (music/voice) at 32 kbps or 24 kbps and the PCM audio codec records audio signals at 128 kbps or 64 kbps for highest fidelity coding and reproduction.

Selectable error correction coding allows storage in audio grade RAMs (ARAMs). Echo cancellation techniques employed during playback allow DTMF tone and Type II Caller ID CAS detection during voice/audio codec operation to support user selectable features. The coder can record messages from the PIA or SIA. The decoder can playback messages to the PIA or both the PIA and SIA. Dual/signal tone transmission is available when the decoder is disabled.

3) V.23 Full-duplex Modem and Caller ID

Both full-duplex transmit and receive (with asymmetric 1200/75 bps connection) and half-duplex (1200 bps) asynchronous V.23 are supported, as well as both serial and parallel interfaces to the modem. The V.23 algorithm includes an optional, programmable, receive compromise equalizer which is active in both V.23 and Caller ID (V.23 Receive only) modes.

Common applications for V.23 include France's Minitel and Japan's Lowest Cost Routing.

4) Features

- Group 3 facsimile transmission/reception
 - ITU-T V.17 and V.33
 - ITU-T V.29, V.27 ter, T.30, V.21 Channel 2, T.4
 - ITU-T V.17 and V.27 ter short train
 - HDLC framing at all speeds
 - Receive dynamic range: 0 dBm to -43 dBm
 - Automatic adaptive equalization
 - Fixed and programmable digital compromise equalization
 - DTMF detect and tone detect
 - ITU-T V.21 Channel 2 FSK 7E Flag Detect
 - Ring detector
 - Programmable transmits level
 - Programmable single/dual tone transmission
- Voice codec
 - 24 minutes of voice storage per 4 Mbit memory
 - Near toll quality voice recording and playback
 - Programmable AGCs
 - Programmable line/microphone input and line/speaker output filters
 - Error correction coding allows ARAM usage
 - DTMF detect, tone detect, and tone transmit
 - Type II Caller ID CAS detection
 - Pitch synchronized fast and slow playback
 - Near-end echo cancellation
- ADPCM Audio codec
 - High fidelity recording and playback of audio signals
 - 32 kbps and 24 kbps
 - Programmable AGCs
 - Programmable line/microphone input and line/speaker output filters
 - DTMF detect, tone detect, and tone transmit
 - Type II Caller ID CAS detection
 - Near-end echo cancellation
- PCM audio codec
 - 128 kbps and 64 kbps
 - DTMF detect and tone detect
 - Type II Caller ID CAS detection
 - Near-end echo cancellation
- V.23 and Type I Caller ID
 - Full-duplex modes:
 - TX = 75 bps. RX = 1200 bps
 - TX = 1200 bps. RX = 75 bps
 - Half-duplex mode:
 - TX = RX = 1200 bps
 - Serial and parallel data modes
 - Programmable parallel data mode
 - 5, 6, 7, or 8 data bits
 - 1 or 2 Stop bits
 - Mark, Space, Even, or Odd Parity
 - Break function
 - Transmitter squelch
 - Compromise equalizer
- 3.3V/5V operation

5) Integrated Analog Control Registers for 20438

The 20438 IA can be used as a Primary Integrated Analog (PIA) codec or as a Secondary Integrated Analog (SIA) codec, depending on the signal connection with the SCE Controller ASIC device. In the SCE100 product, both the PIA and the SIA are packaged external to the SCE Controller device, whereas in the SCE214V, the PIA is packaged with the SCE214V Controller and the SIA is external.

The 20438 IA provides gain, filtering, internal analog switching, and an internally sourced microphone bias output. The IA is controlled by three control registers and an address register located in internal RAM space which are accessed via the modem interface memory. These registers provide individual controls for the IA's inputs, outputs, gain settings, and switching.

The registers are located in internal DSP RAM. Each bit of each 8-bit IA control register has exactly the same meaning for the PIA and the SIA. The LSB of each 16-bit address contents is used to control the PIA. The MSB of each 16-bit address contents is used to control the SIA.

The following table the PIA/SIA control register RAM access code.

Register	SBRAMx	BRx	Crx	IOx	AREXx	ADDx	PIA Reg*	SIA Reg*
IACR1	0	0	0	0	0	D0	0	1
IACR2	0	0	0	0	0	D4	0	1
IACR3	0	0	0	0	0	D5	0	1
IAADD	0	0	0	0	0	CE	0, 1	0, 1
NOTES: *Registers to use when x=1. When x=2, add 10h.								

- For changes made to IACR1 to be effective, the host must write to IAADD with a value of 0002h.
- For changes made to IACR2 to be effective, the host must write to IAADD with a value of 0006h.
- For changes made to IACR3 to be effective, the host must write to IAADD with a value of 0007h.

Configuration default values are shown below.

DEFAULT VALUE			
CONFIGURATION	IACR1	IACR2	IACR3
V.17/V.33	1D9Eh	0008h	0000h
V.29	1D9Eh	0008h	0000h
V.27ter	1D9Eh	0008h	0000h
V.21 Ch. 2	1D9Eh	0008h	0000h
V.23/Caller ID	1D9Eh	0008h	0000h
Tone Transmit/Detect	1D9Eh	0008h	0000h
Voice/Audio Codec	0D16h	0008h	0000h
Speakerphone	0D16h	0008h	0000h

The following signal flow block diagram is for a signal IA and it applies to both PIA and SIA.

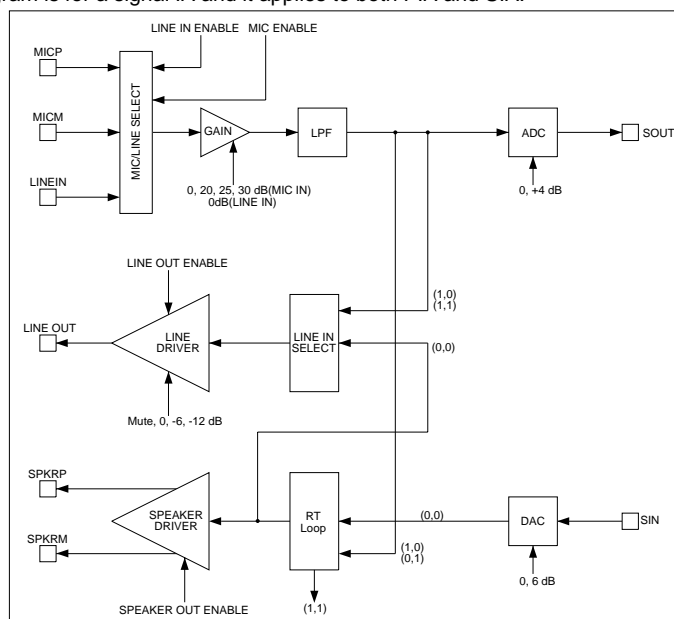


Fig. 3 PIA/SIA Signal Flow Control

SCE214V (IC3) Terminal descriptions

Pin No.	Pin List	I/O	Input Type	Output Type	Pin Description
1	VDDPLL	—	—	—	PLL Power
2	VSSPLL	—	—	—	PLL GND
3	ROMCSn	O	—	13Xs	—
4	SYNC/GPO[20]	O	—	13Xs	—
5	WRn	O	—	13Xs	—
6	RDn	O	—	13Xs	—
7	DEBUGn	I	Hu	—	—
8	TSTCLK	O	—	13Xs	—
9	VSS	—	—	—	Digital GND
10	SXIN	I	Osc0	—	—
11	SXOUT	O	—	Osc0	—
12	OPO[0]/GPO[8]/SMPWRCTRL	O	—	13Xs	—
13	OPO[1]/GPO[9]/PMPWRCTRL	O	—	13Xs	—
14	OPO[2]/GPO[10]/RINGER	OZ	—	13Xs	—
15	OPO[3]/GPO[11]	O	—	13Xs	—
16	OPO[4]/GPO[12]/SSTXD1	O	—	13Xs	—
17	OPO[5]/GPO[13]	O	—	13Xs	—
18	OPO[6]/GPO[14]	O	—	13Xs	—
19	OPI[0]/GPIO[21]/SSRXD1	I/O	Hu	13Xs	—
20	OPI[1]/GPIO[22]/SSSTAT1	I/O	Hu	13Xs	—
21	OPI[2]/GPIO[23]/SSCLK1	I/O	Hu	13Xs	—
22	OPI[3]/GPIO[24]	I/O	Hu	13Xs	—
23	LDCS/GPO[17]	O	—	1XC	—
24	VDD	—	—	—	Digital Power
25	RASn	O	—	13Xs	—
26	CAS[0]n	O	—	13Xs	—
27	DWRn	O	—	13Xs	—
28	VBAT	—	—	—	RTC Battery Power
29	XIN	I	Osc1	—	—
30	XOUT	O	—	Osc1	—
31	WRPROTn	O	—	1XC	—
32	TEST[1]	I	Hd	—	—
33	TEST[0]	I	Hd	—	—
34	BATRSTn	I	H	—	—
35	INTPWRDWNEn	I	H	—	—
36	PWRDWNn	I/O	H	13Xs	—
37	N.C.	—	—	—	—
38	ADGA	—	VADG	—	PADC Analog GND
39	VREFn/CLREF	I	VR-	—	PADC
40	VIN	I	VA	—	PADC
41	ADGA	—	VADG	—	PADC Analog GND
42	ADVA	—	VADV	—	PADC Analog Power
43	ADXG	—	VXG	—	PADC
44	VREFp	I	VR	—	PADC
45	VSS	—	—	—	VSS Digital GND
46	IVREFn	O	—	VR-	PADC
47	IVREFp	O	—	VR+	PADC
48	VDD	—	—	—	Digital Power
49	THADI	I	Analog	—	TADC
50	VSS	—	—	—	Digital GND
51	GPIO[17]/DSPIRQn	I/O	Hu	13Xs	—
52	GPIO[16]/IRQ[8]	I/O	Hu	13Xs	—
53	GPIO[15]/CS[5]n	I/O	Hu	13Xs	—
54	GPIO[13]/CS[3]n	I/O	Hu	13Xs	—
55	GPIO[37]/IRQ15n/DSPCSn	I	Hu	13Xs	—
56	GPIO[4]/CPCIN/TPHPWRCTRL/DMAREQ	I/O	Hu	13Xs	—
57	STRB[0]	O	—	1XC	—
58	STRB[1]	O	—	1XC	—
59	STRB[2]	O	—	1XC	—
60	STRB[3]	O	—	1XC	—
61	PLAT	O	—	3XC	—
62	PDAT	O	—	2XC	—
63	PCLK/DMAACK	O	—	3XC	—

SCE214V (IC3) Terminal descriptions

Pin No.	Pin List	I/O	Input Type	Output Type	Pin Description
64	VDD	—	—	—	Digital Power
65	GPIO[11]/BE/SERINP/SR4IN	I/O	Hu	13Xs	—
66	GPIO[19]/RDY/SEROUT	I/O	Hu	13Xs	—
67	START	O	—	2XC	—
68	CLK1n/GPO[25]	O	—	13Xs	—
69	CLK2/GPO[24]	O	—	13Xs	—
70	GND	—	—	—	IA GND
71	MCLK	ID	—	—	Main Clock from DSP
72	CTRLI	ID	d	—	Control Data from DSP
73	TESTC	ID	d	—	IA Test
74	SOUT	OD	—	T	Serial Data to DSP
75	SIN	ID	d	—	Serial Data to DSP
76	FSYNC	I/OD	d	—	Frame Sync Signal (IA)
77	POR	IA	d	—	Hardware Reset
78	GND	—	—	—	IA GND
79	LINE_INP	IA	—	—	Analog Input to Line Pre-Amp.
80	MIC_INP	IA	—	—	Positive differential Analog Input to Microphone Pre-Amp.
81	MIC_INM	IA	—	—	Negative differential Analog Input to Microphone Pre-Amp.
82	MIC_BIAS	OA	—	—	2.2 V Nominal DC Bias Source for Electret Microphone
83	BG	OA	—	—	Analog reference Voltage Output
84	VC	OA	—	—	Analog Ground Bias Output
85	AVDD	PWR	—	—	IA Analog Power
86	GND	—	—	—	IA GND
87	LINE_OUTP	OA	—	—	Line Driver Output
88	SPKR_OUTP	OA	—	—	Positive Speaker Driver Output
89	SPKR_OUTM	OA	—	—	Negative Speaker Driver Output
90	DVDD	PWD	—	—	IA Digital Power
91	MODE_0	ID	u	—	Connect to VSS (IA Mode Selection)
92	ICLK	I/OD	—	—	IA Bit Clock Input/Output
93	VSS	—	—	—	VSS Digital GND
94	FCSn[1]/VIDCTL[0]/GPO[23]	O	—	13Xs	—
95	IARESET	O	—	13Xs	DSP to EXTIA POR
96	IACLK	O	—	13Xs	DSP to EXTIA MCLK
97	VDD	—	—	—	Digital Power
98	IA1CLK	I	H	—	DSP from EXTIA ICLK
99	SR3IN/DSPIRQn	I	H	—	DSP from primary EXTIA SOUT/EXT. Modem IRQn
100	SR4OUT	O	—	13Xs	DSP to primary EXTIA SIN
101	SR1IO	O	—	13Xs	DSP to EXTIA CTRL1
102	SA1CLK	I	H	—	DSP from EXTIA FSYNC
103	GPIO[7]/SSRXD2/SASRXD2	I/O	Hu	13Xs	—
104	GPIO[6]/SSTXD2/SASTXD2	I/O	Hu	13Xs	—
105	GPIO[5]/SSCLK2/SASCLK2	I/O	Hu	13Xs	—
106	GPIO[10]/SSSTAT2/DSS_AVAIL	I/O	Hu	13Xs	—
107	VSS	—	—	—	Digital GND
108	RESETn	I/O	Hu	2XC	—
109	GPIO[3]/SASCLK	I/O	Hu	13Xs	—
110	GPIO[2]/SASRXD	I/O	Hu	13Xs	—
111	GPIO[1]/SASTXD	I/O	Hu	13Xs	—
112	GPIO[9]/FRDn	I/O	Hu	13Xs	—
113	GPIO[8]/FWRn	I/O	Hu	13Xs	—
114	A[0]	I/O	Tu	13Xs	CPU Address Bus
115	A[1]	I/O	Tu	13Xs	CPU Address Bus
116	A[2]	I/O	Tu	13Xs	CPU Address Bus
117	A[3]	I/O	Tu	13Xs	CPU Address Bus
118	A[4]	I/O	Tu	13Xs	CPU Address Bus
119	VDD	—	—	—	Digital power
120	A[5]	I/O	Tu	13Xs	CPU Address Bus
121	A[6]	I/O	Tu	13Xs	CPU Address Bus
122	A[7]	I/O	Tu	13Xs	CPU Address Bus
123	A[8]	I/O	Tu	13Xs	CPU Address Bus
124	A[9]	I/O	Tu	13Xs	CPU Address Bus
125	A[10]	I/O	Tu	13Xs	CPU Address Bus
126	A[11]	I/O	Tu	13Xs	CPU Address Bus

SCE214V (IC3) Terminal descriptions

Pin No.	Pin List	I/O	Input Type	Output Type	Pin Description
127	A[12]	I/O	Tu	13Xs	CPU Address Bus
128	A[13]	I/O	Tu	13Xs	CPU Address Bus
129	A[14]	I/O	Tu	13Xs	CPU Address Bus
130	A[15]	I/O	Tu	13Xs	CPU Address Bus
131	A[16]	I/O	Tu	13Xs	CPU Address Bus
132	VDD	—	—	—	Digital Power
133	VSS	—	—	—	Digital GND
134	A[17]	I/O	Tu	13Xs	CPU Address Bus
135	A[18]	I/O	Tu	13Xs	CPU Address Bus
136	A[19]	I/O	Tu	13Xs	CPU Address Bus
137	A[20]	I/O	Tu	13Xs	CPU Address Bus
138	A[21]/EYECLK	I/O	Tu	13Xs	CPU Address Bus
139	A[22]/EYESYNC	I/O	Tu	13Xs	CPU Address Bus
140	A[23]/EYEXY	I/O	Tu	13Xs	CPU Address Bus
141	D[0]	I/O	Tu	13Xs	CPU Data Bus
142	D[1]	I/O	Tu	13Xs	CPU Data Bus
143	D[2]	I/O	Tu	13Xs	CPU Data Bus
144	D[3]	I/O	Tu	13Xs	CPU Data Bus
145	D[4]	I/O	Tu	13Xs	CPU Data Bus
146	D[5]	I/O	Tu	13Xs	CPU Data Bus
147	D[6]	I/O	Tu	13Xs	CPU Data Bus
148	D[7]	I/O	Tu	13Xs	CPU Data Bus
149	GPIO[20]/ALTTONE	I/O	Hu	13Xs	—
150	GPIO[26]	I/O	Hu	13Xs	—
151	GPIO[27]	I/O	Hu	13Xs	—
152	GPIO[28]	I/O	Hu	13Xs	—
153	GPO[26]	O	—	13Xs	—
154	GPO[27]	O	—	13Xs	—
155	GPO[28]	O	—	13Xs	—
156	GPO[29]	O	—	13Xs	—
157	GPO[30]/SR3OUT	O	—	13Xs	—
158	GPIO[29]	I/O	Hu	13Xs	—
159	GPIO[31]	I/O	Hu	13Xs	—
160	GPIO[32]	I/O	Hu	13Xs	—
161	VDD	—	—	—	Digital power
162	GPIO[34]	I/O	Hu	13Xs	—
163	GPIO[35]	I/O	Hu	13Xs	—
164	GPIO[36]	I/O	Hu	13Xs	—
165	Vss	—	—	—	Digital GND
166	VDD	—	—	—	Digital Power
167	PM[0]/GPO[0]	O	—	13Xs	—
168	PM[1]/GPO[1]	O	—	13Xs	—
169	PM[2]/GPO[2]	O	—	13Xs	—
170	PM[3]/GPO[3]	O	—	13Xs	—
171	SM[0]/GPO[4]	O	—	13Xs	—
172	SM[1]/GPO[5]	O	—	13Xs	—
173	SM[2]/GPO[6]	O	—	13Xs	—
174	SM[3]/GPO[7]	O	—	13Xs	—
175	REGDMA/GPO[18]/CLKDIV[0]	I/O	T	13Xs	—
176	WAITn/GPO[19]/CLKDIV[1]	I/O	T	13Xs	—

(3) Panel control block

The following controls are performed by the SCE214V.

- Operation panel key scanning
- Operation panel LCD display

(4) Mechanism/recording control block

- Recording control block diagram (1)

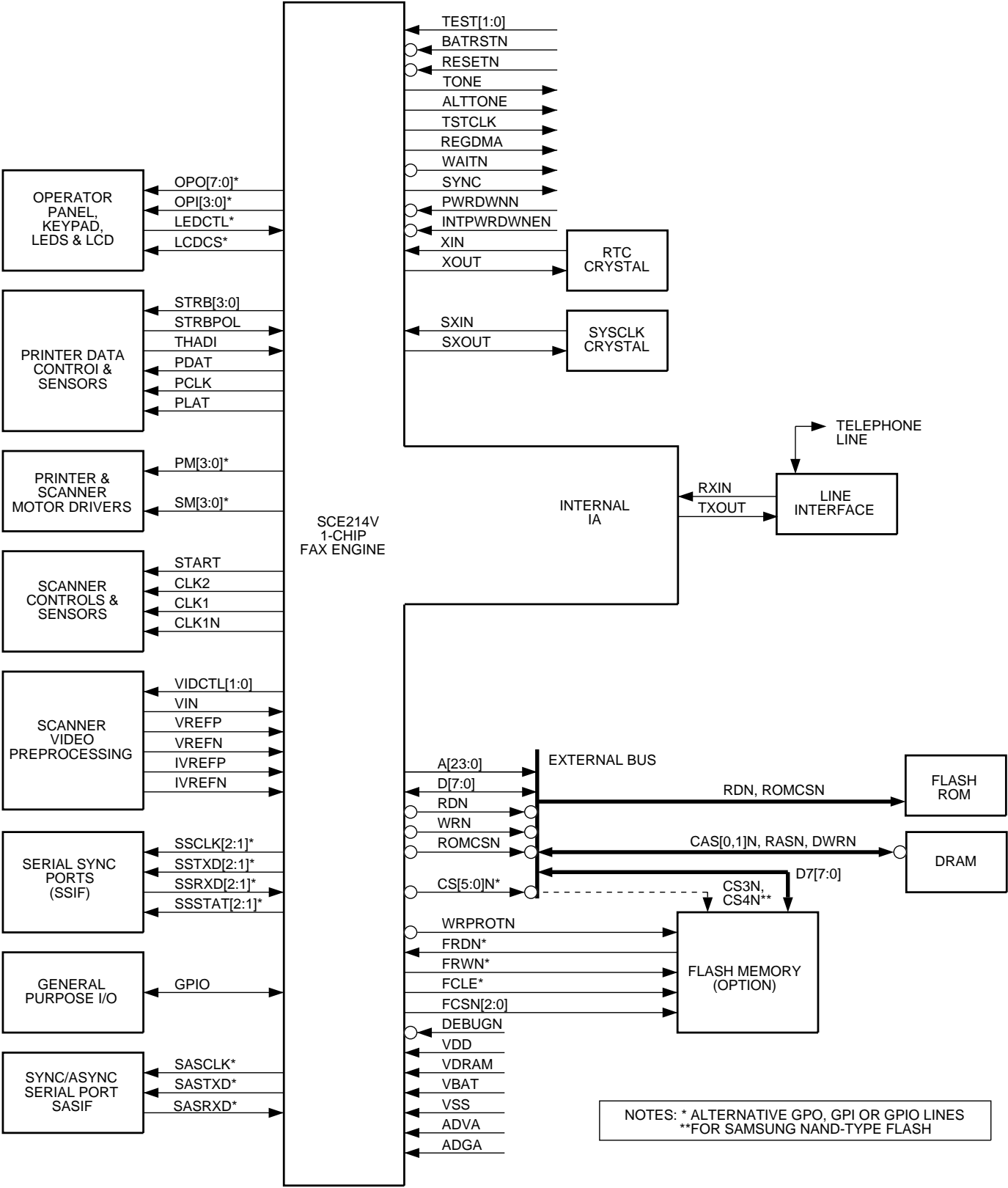


Fig. 4

[3] Circuit description of TEL/LIU PWB

(1) TEL/LIU block operational description

1) Block diagram

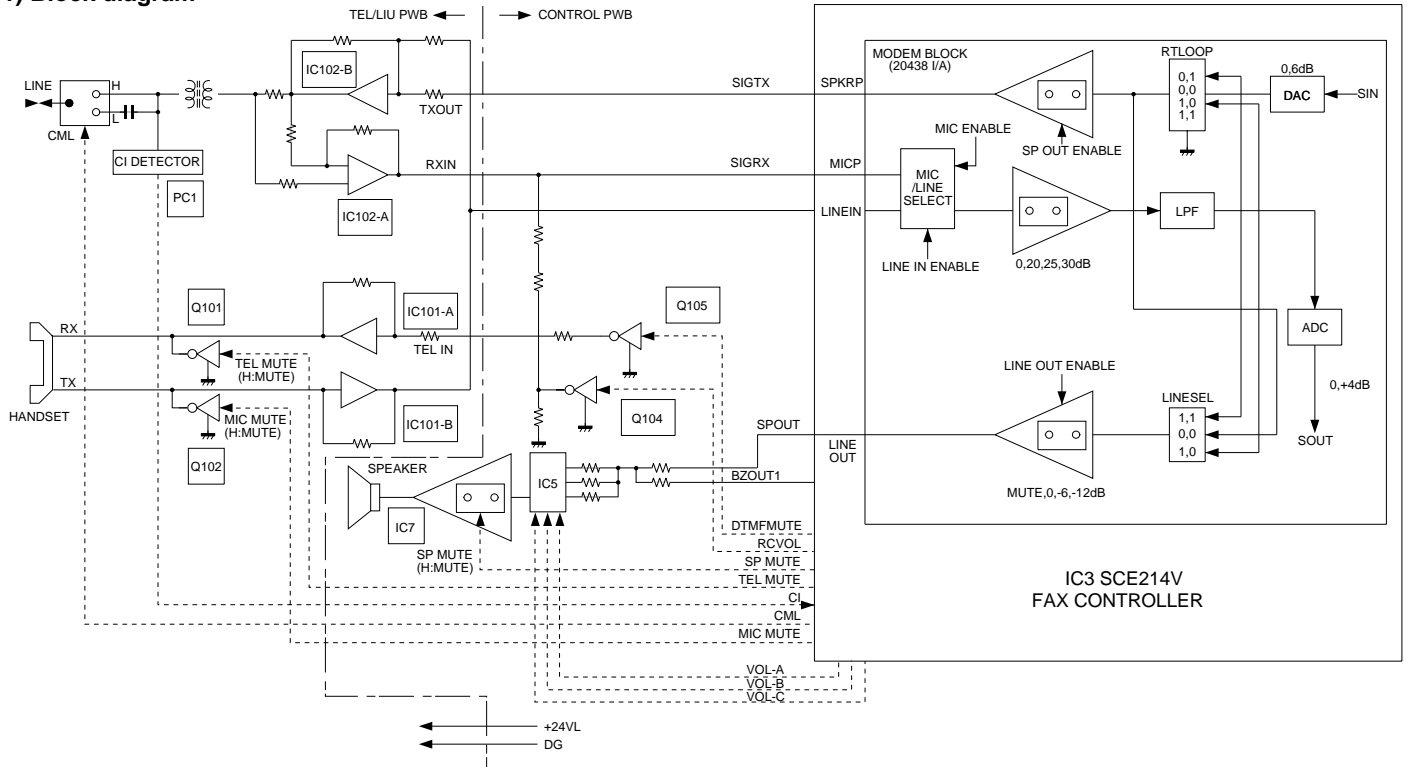


Fig. 5

2) Circuit description

The TEL/LIU PWB is composed of the following 6 blocks.

1. Speech circuit section
2. Dial transmission section
3. Speaker amplifier section
4. Ringer circuit section
5. CI detection circuit
6. Signal/DTMF transmission level & receiving level

3) Block description

1. Speech circuit section

- The receiver volume is an electronic volume type, this model is switched in 3 steps.

2. Dial transmission section

- D.P. transmission: The CML relay is turned on and off for control in the DP calling system. (Refer to the attached sheet.)
- DTMF transmission: It is formed in the modem, and is output.

3. Speaker amplifier section

- Ringer volume :It is controlled by the combination of the attenuator value of the LINE DRIVER in the modem and the ringer sending level sent from the modem.
- Speaker volume :It is controlled by the attenuator value of the IC5 and IC3 (VOL-A,B,C)

4. Ringer circuit section

- The ringer sound is formed in the tone of modem when CI signal is detected. The amplifier circuit drives the speaker of the main body.

5. CI detection circuit

- CI is detected by the photo coupler which is integrated in series in the primary side TEL circuit well proven in the existing unit.

6. Signal/DTMF transmission level & receiving level

- Signal transmission level setting: ATT -8 dB Circuit output: -11 dBm.
- DTMF transmission level setting: HF -2.5 dBm LF -4.5 dBm
Thus, set the level.

4) Signal selection

The following signals are used to control the transmission line of TEL/FAX signal. For details, refer to the signal selector matrix table.

[Control signals from output port]

Signal Name	Description															
CML (The circuit is located in the TEL/LIU PWB.)	<u>Line connecting relay and DP generating relay</u> H: Line make L: Line break															
SP MUTE (The circuit is located in the TEL/LIU PWB.)	<u>Speaker tone mute control signal</u> H: Muting (Power down mode) L: Muting cancel (Normal operation)															
TELMUTE	<u>Handset reception mute control signal</u> H: Muting L: Muting cancel															
RCVOL DTMFMUTE (The circuit is located in the control PWB.)	<u>Handset receiver volume control signal</u> <table><tr><td>Volume</td><td>High</td><td>Middle</td><td>Low</td><td>DTMF sending</td></tr><tr><td>RCVOL</td><td>L</td><td>H</td><td>H</td><td>H</td></tr><tr><td>DTMFMUTE</td><td>L</td><td>L</td><td>H</td><td>H</td></tr></table> <p>Note: The DTMF sending listed above is DTMF signal sending in the handset OFF-HOOK mode.</p>	Volume	High	Middle	Low	DTMF sending	RCVOL	L	H	H	H	DTMFMUTE	L	L	H	H
Volume	High	Middle	Low	DTMF sending												
RCVOL	L	H	H	H												
DTMFMUTE	L	L	H	H												

VOLUME SETTING		LINEOUT A		RCVOL	DTME MUTE	VOL A	VOL B	VOL C
		(HIGH)	(LOW)					
Receiver volume setting	Low			1	1			
	Middle			1	0			
	High			0	0			
DTMF Transmission volume setting (Receiver)	Fixed			1	1			
Key buzzer volume setting	Fixed					1	1	1
Speaker volume setting	Level1					0	1	1
	Level2					0	0	1
	Level3					1	1	0
	Level4					0	1	0
	Level5					1	0	0
Ringer volume setting	Low					1	1	1
	Middle					0	0	1
	High					0	0	0
DTMF speaker volume setting	Level1					1	0	1
	Level2					1	0	1
	Level3					1	0	1
	Level4					1	0	1
	Level5					1	0	1
OGM playback speaker volume setting	Level1					0	0	1
	Level2					1	1	0
	Level3					0	1	0
	Level4					1	0	0
	Level5					0	0	0
ICM record speaker volume setting	Level1					0	0	1
	Level2					1	1	0
	Level3					0	1	0
	Level4					1	0	0
	Level5					0	0	0

[Signals for status recognition according to input signals]

Signal Name	Function
RHS	H: The handset is in the on-hook state. L: The handset is in the off-hook state.
CI	Incoming call (CI) detection signal

[Other signals]

Signal Name	Function
TEL IN	Receiving signal from line or modem
SPOUT	Speaker output signal
TXOUT	Transmission (DTMF) analog signal output from modem
RXIN	Reception (DTMF, others) analog signal input into modem
TELOUT	Voice input to MODEM from handset.

NO	Signal Name (CNLIUA)	NO	Signal Name (CNLIUA)
1	RHS-	8	TXOUT
2	DG	9	CML
3	+24VL	10	PIN
4	MICMUTE	11	FILM
5	TELIN	12	CI-
6	TELMUTE	13	HS-
7	RXIN	14	TELOUT

(Example: SENDING/RECEIVING)

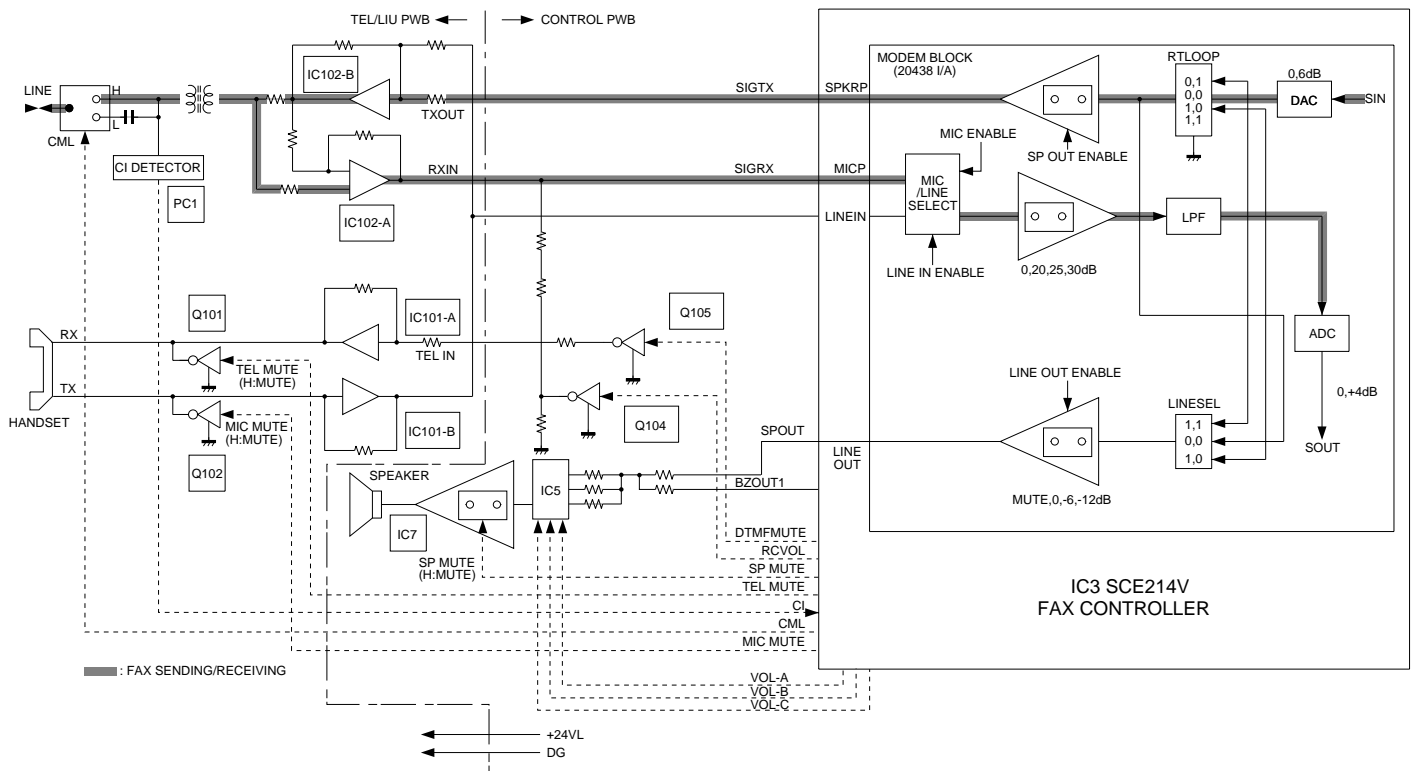


Fig. 6

[4] Circuit description of power supply PWB

1. Block diagram

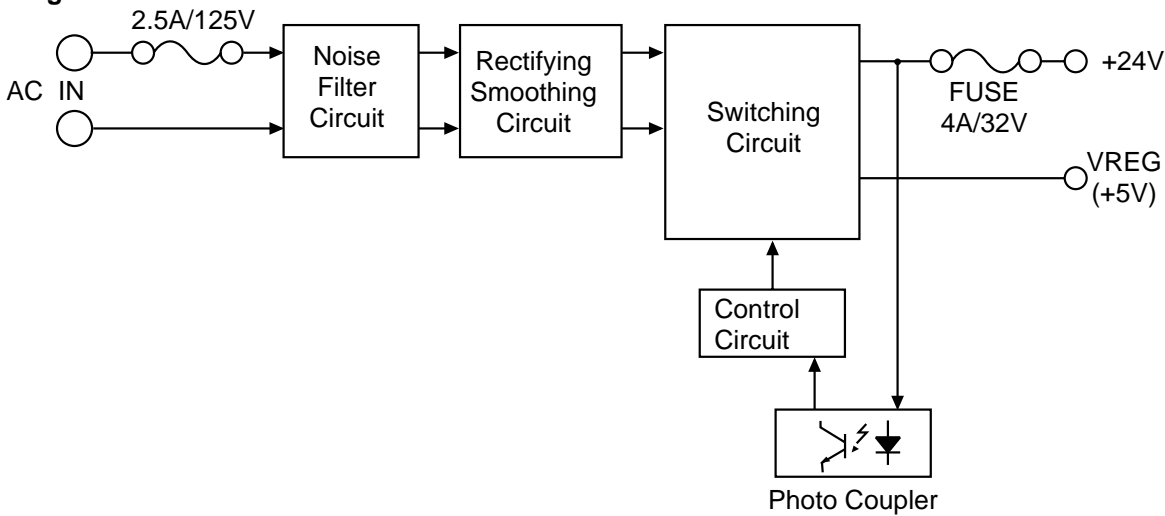


Fig. 7

2-1. Noise filter circuit

The input noise filter section is composed of L1 and C1, which reduces normal mode noise from the AC line and common mode noise to the AC line.

2-2. Rectifying/smoothing circuit

The AC input voltage is rectified by diode D1, 2, 3, 4 and smoothed by capacitor C2 to supply DC voltage to the switching circuit section.

2-3. Switching circuit

This circuit includes MOS FET Q1 and the gate drive circuit, and components around Q1.

In this circuit, the DC voltage supplied from the rectifying/smoothing section is converted into high Frequency pulses by ON/OFF repetition of Q1.

2-4. Control circuit

This circuit controls output voltage of +24V by adjusting ON period of Q1, looking at signal from photo coupler PC1.

In this operation PC1 takes charge of important part.

The over current protection is performed by bringing Q1 to OFF state through detection of voltage of T1 Subwinding.

The over voltage protection is performed by operating the over current protection circuit through detection of Zener diode ZD4 and short-circuiting of load.

2-5. VREG(+5V) circuit

DC voltage supplied by rectifying the output of transformer T1 with diode D8, C10.

[5] Circuit description of CIS unit

1. CIS

Cis is an image sensor which puts the original paper in close contact with the full-size sensor for scanning, being a monochromatic type with the pixel number of 1,728 dots and the main scanning density of 8 dots/mm.

It is composed of sensor, rod lens, LED light source, light-conductive plate, control circuit and so on, and the reading line and focus are previously adjusted as the unit.

Due to the full-size sensor, the focus distance is so short that the set is changed from the light weight type to the compact type.

2. Waveforms

The following clock is supplied from SCE214V of the control board, and VO is output.

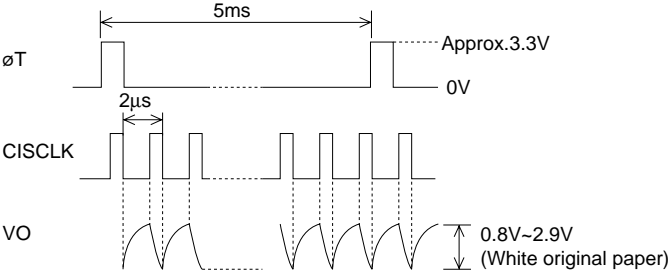
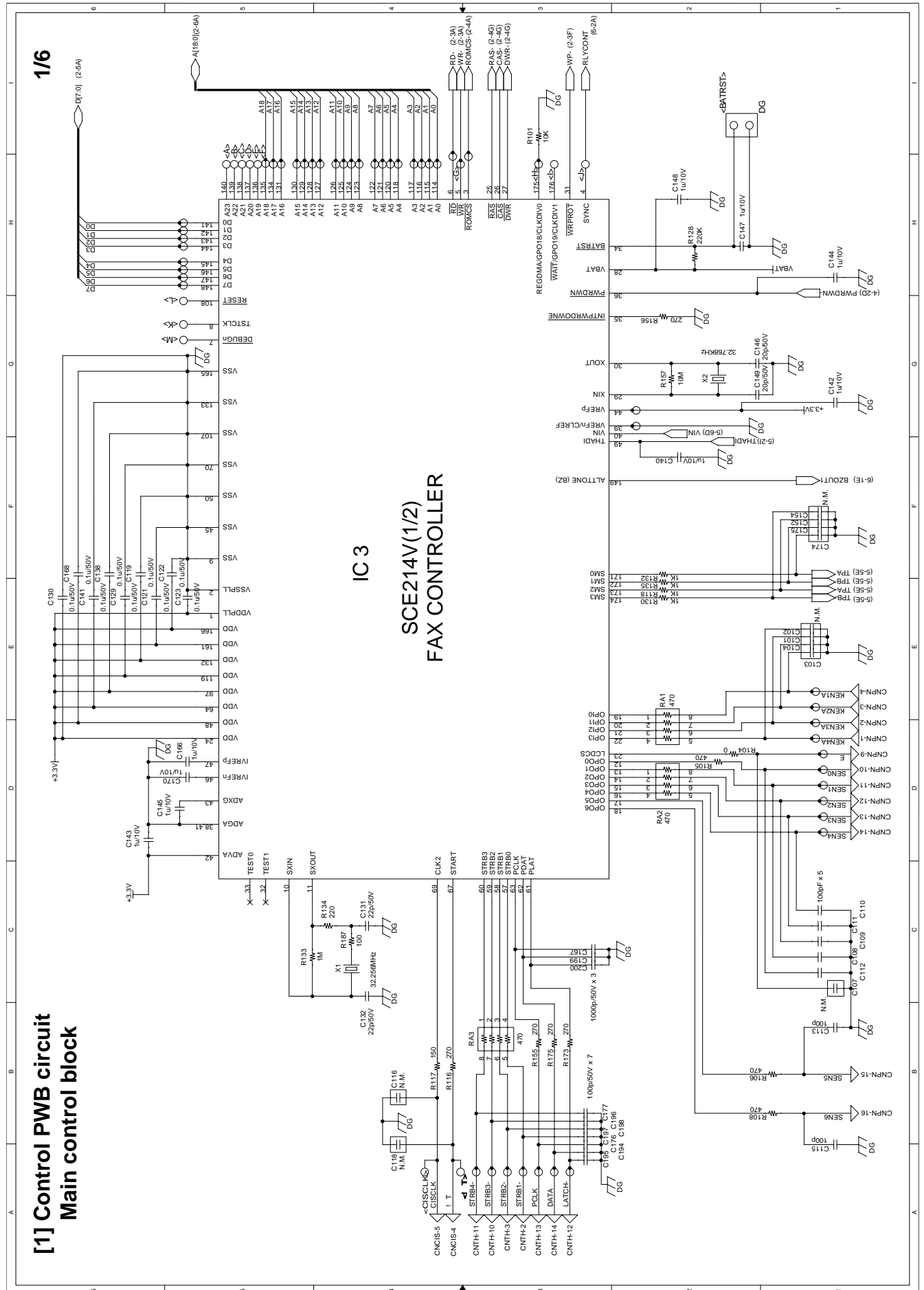
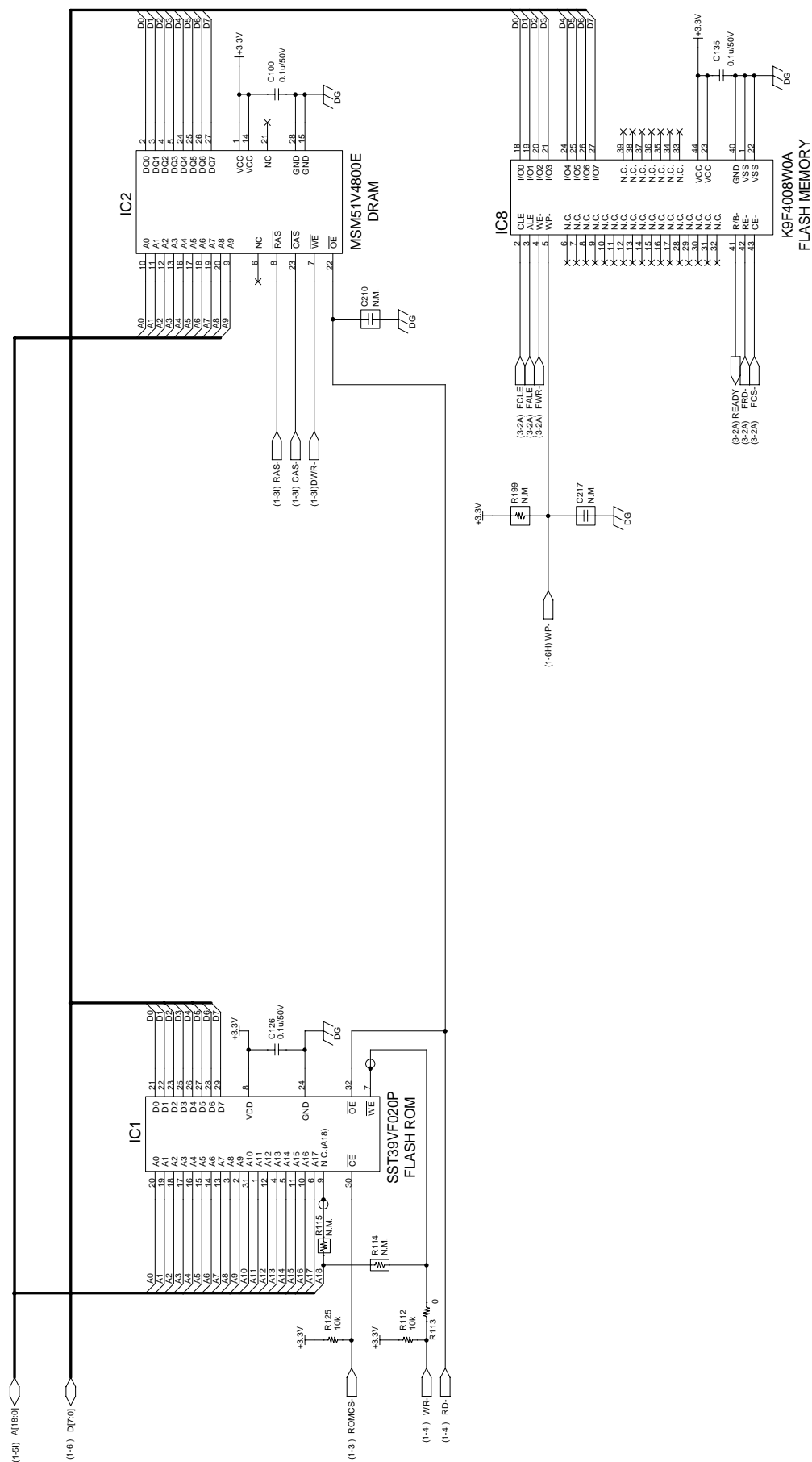


Fig. 8

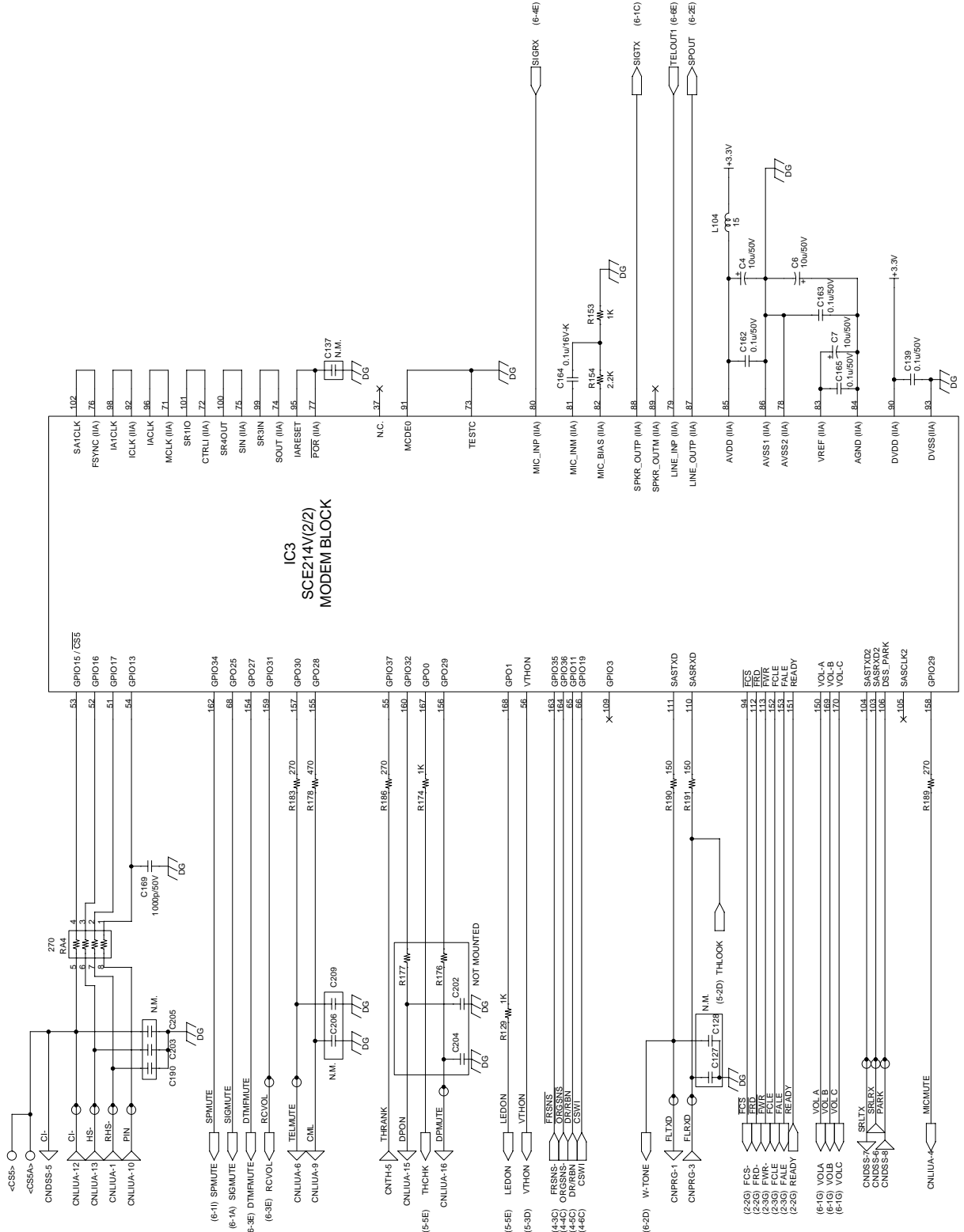
CHAPTER 6. CIRCUIT SCHEMATICS AND PARTS LAYOUT



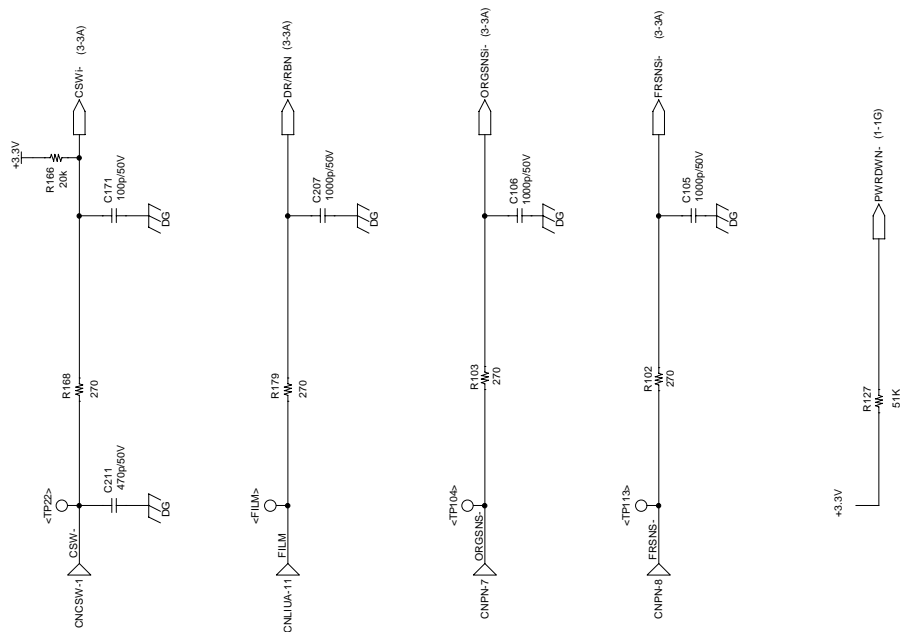


FAX Modem block

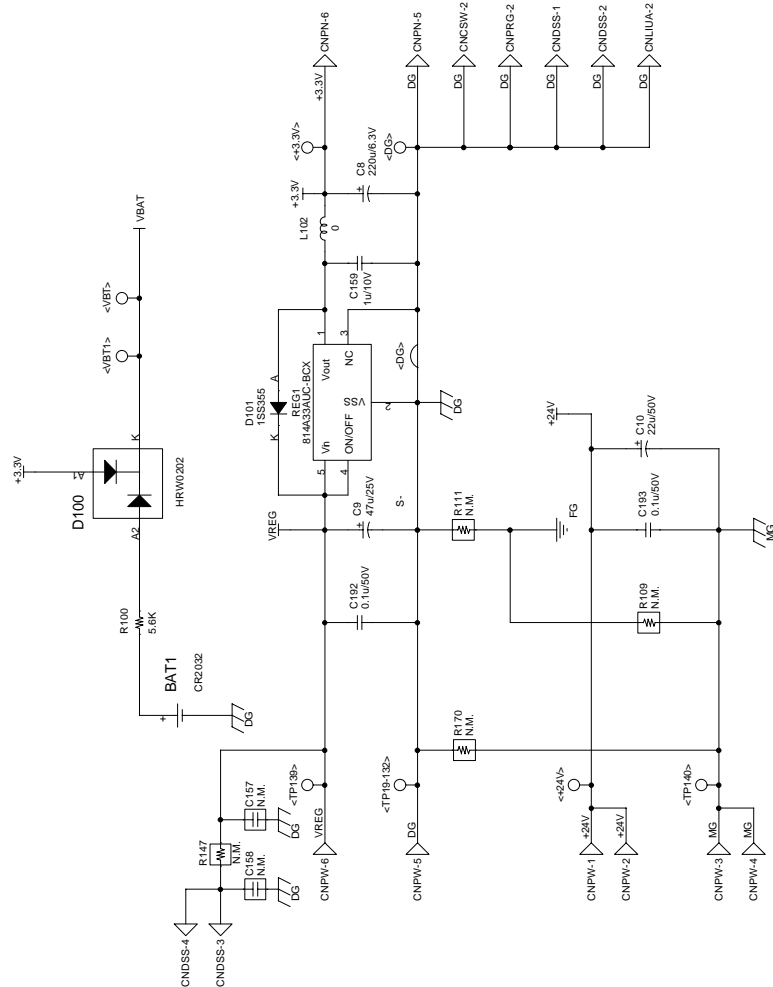
3/6

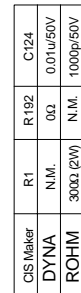


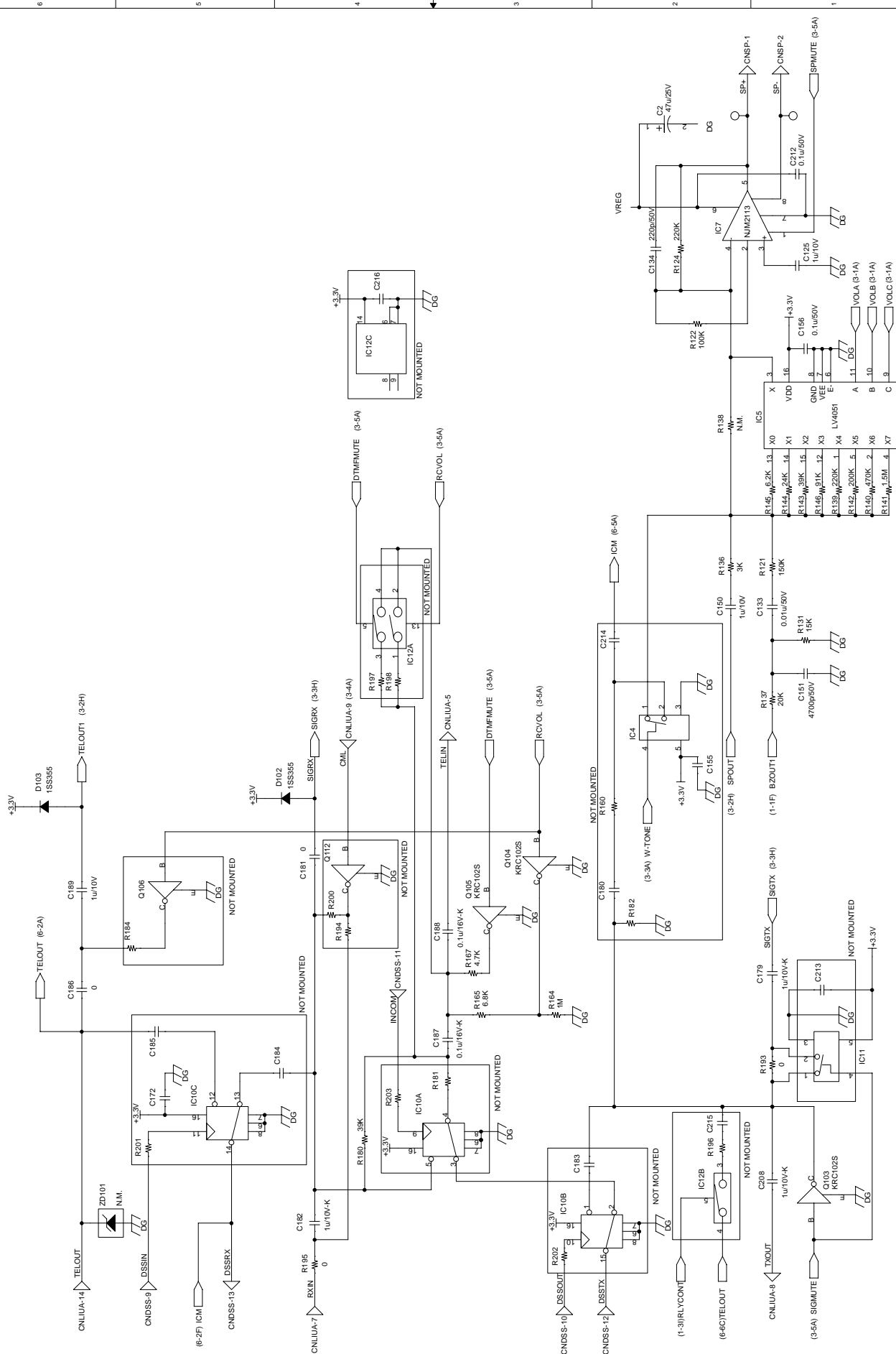
Sensor/Reset/Power supply block



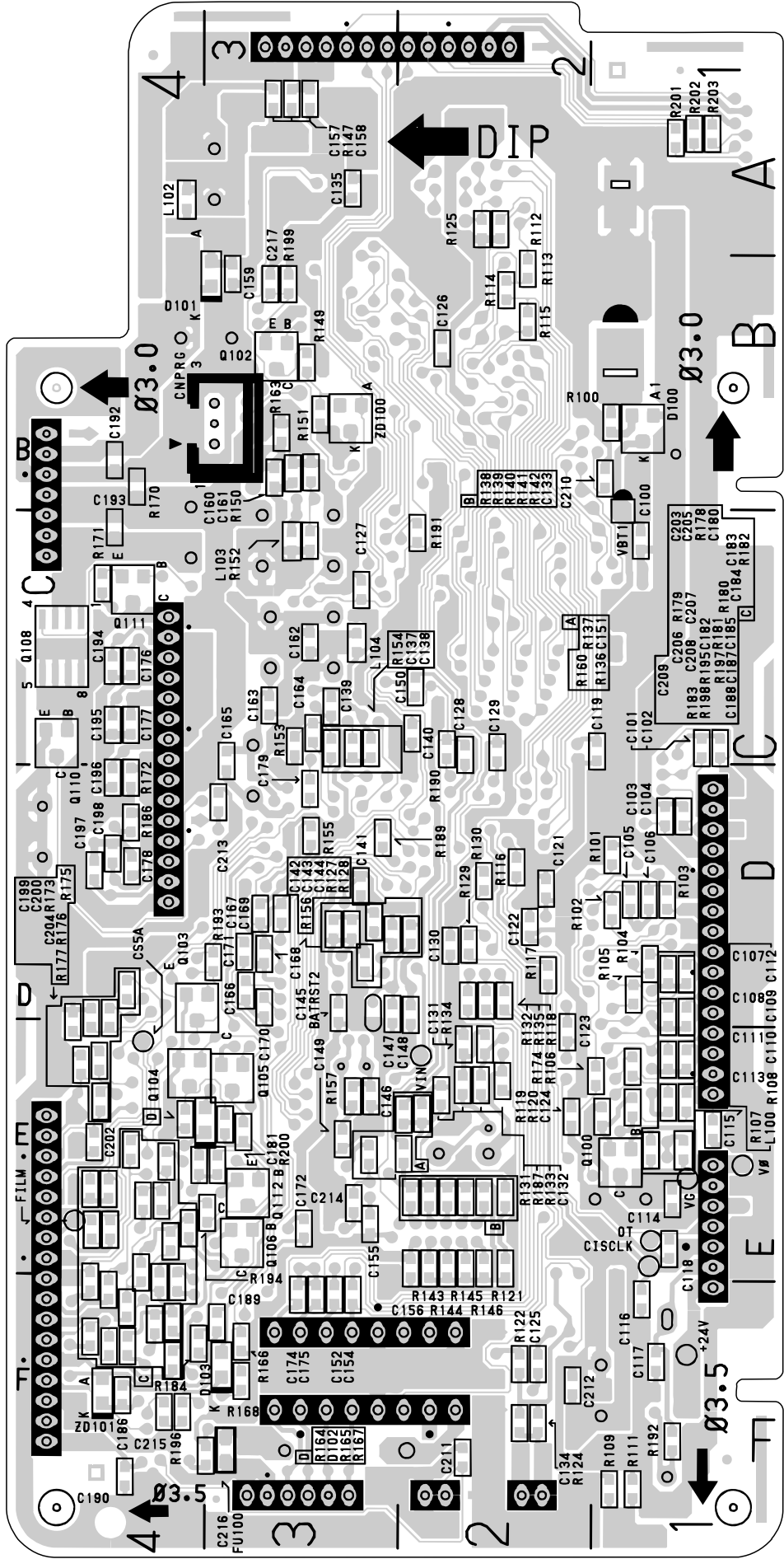
4/6





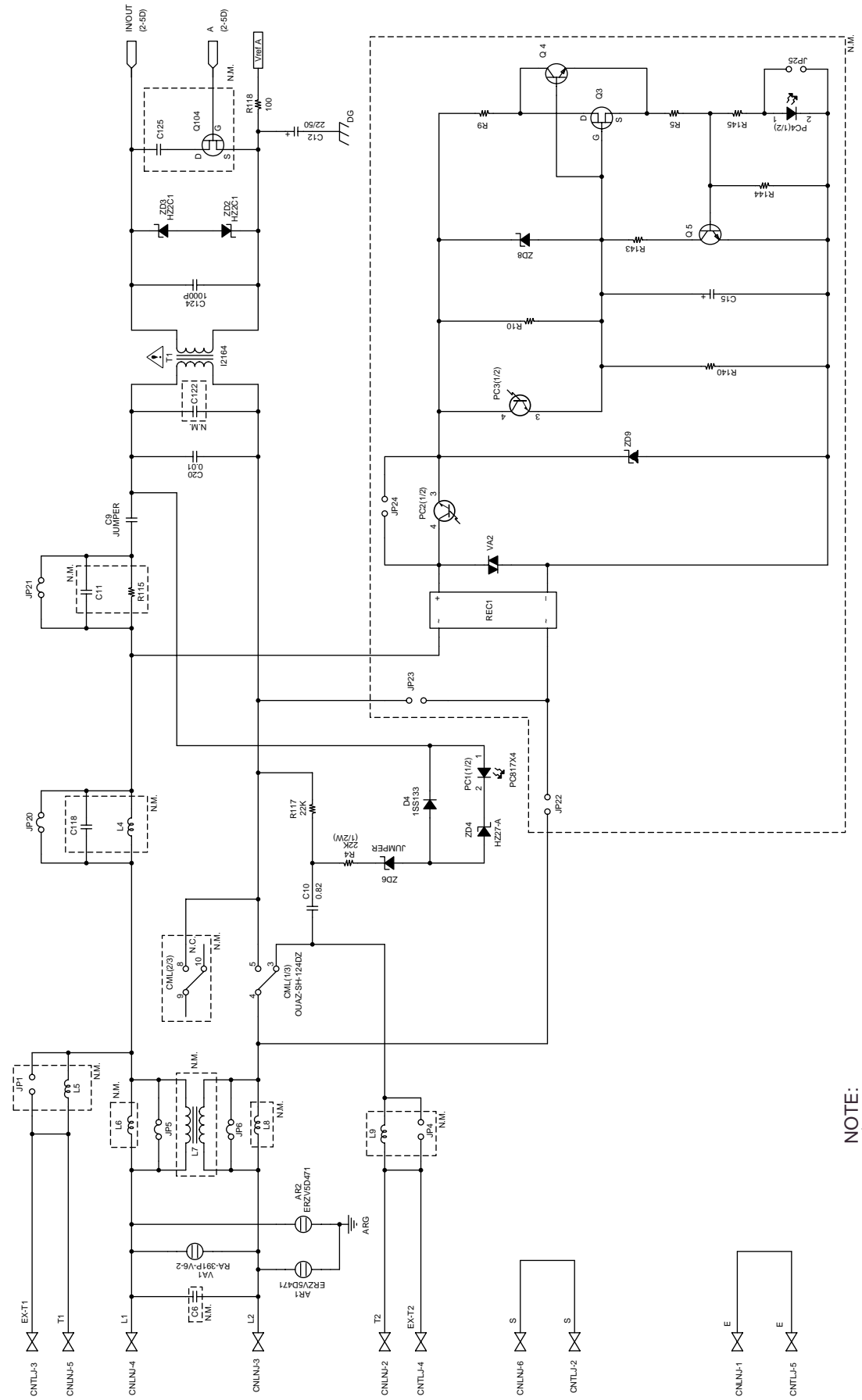


Control PWB parts layout (Bottom side)

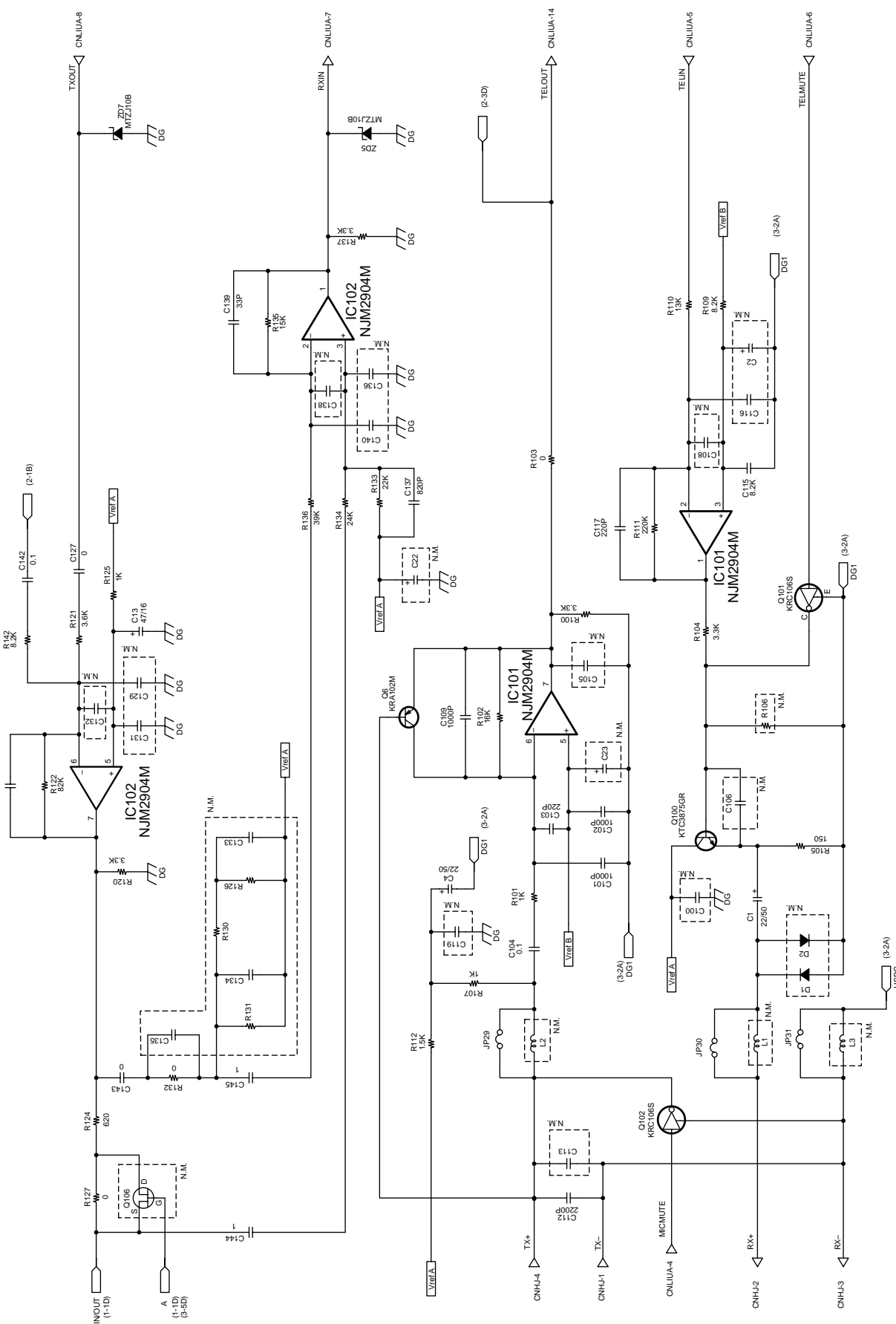


[2] TEL/LIU PWB circuit

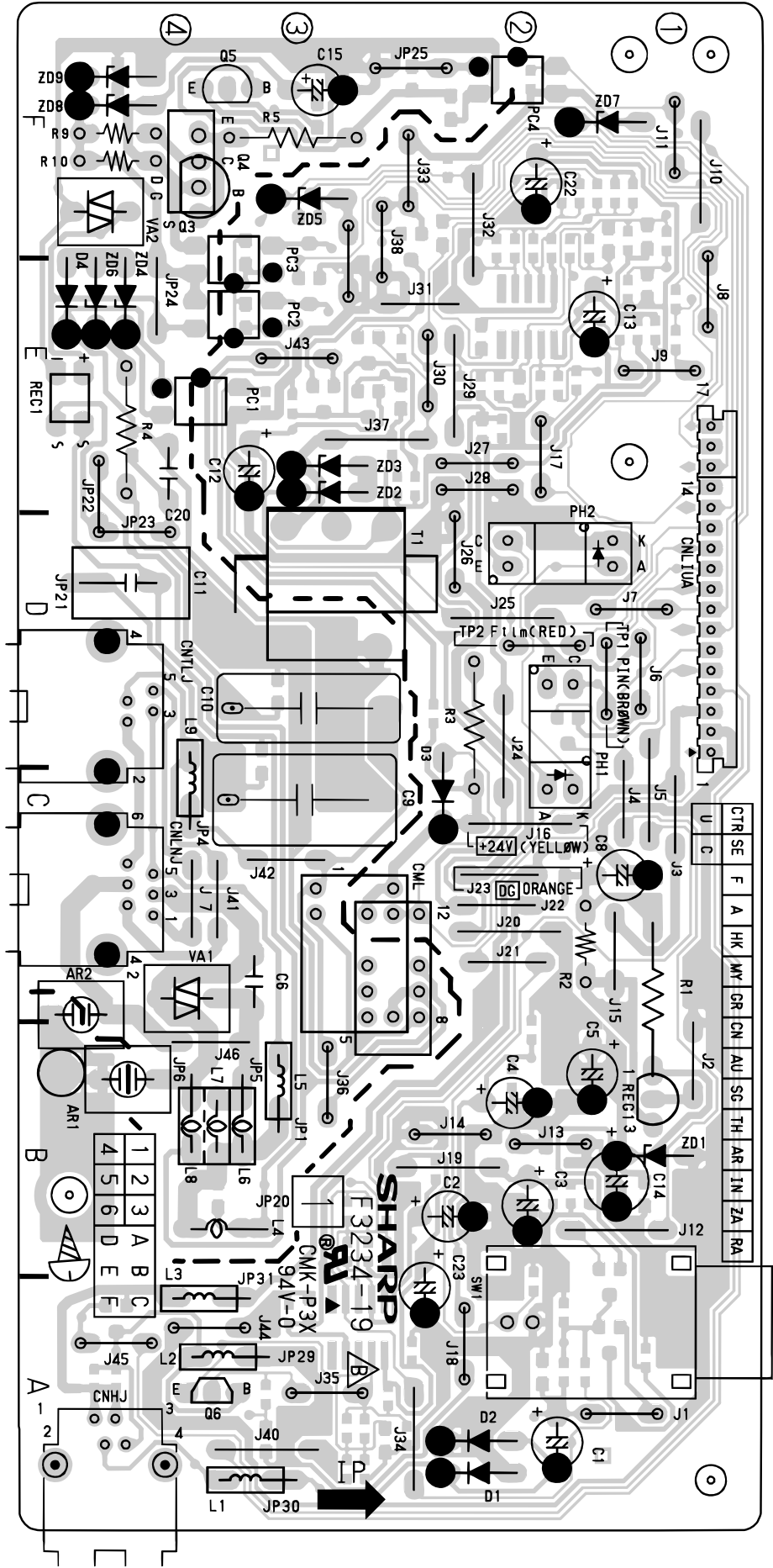
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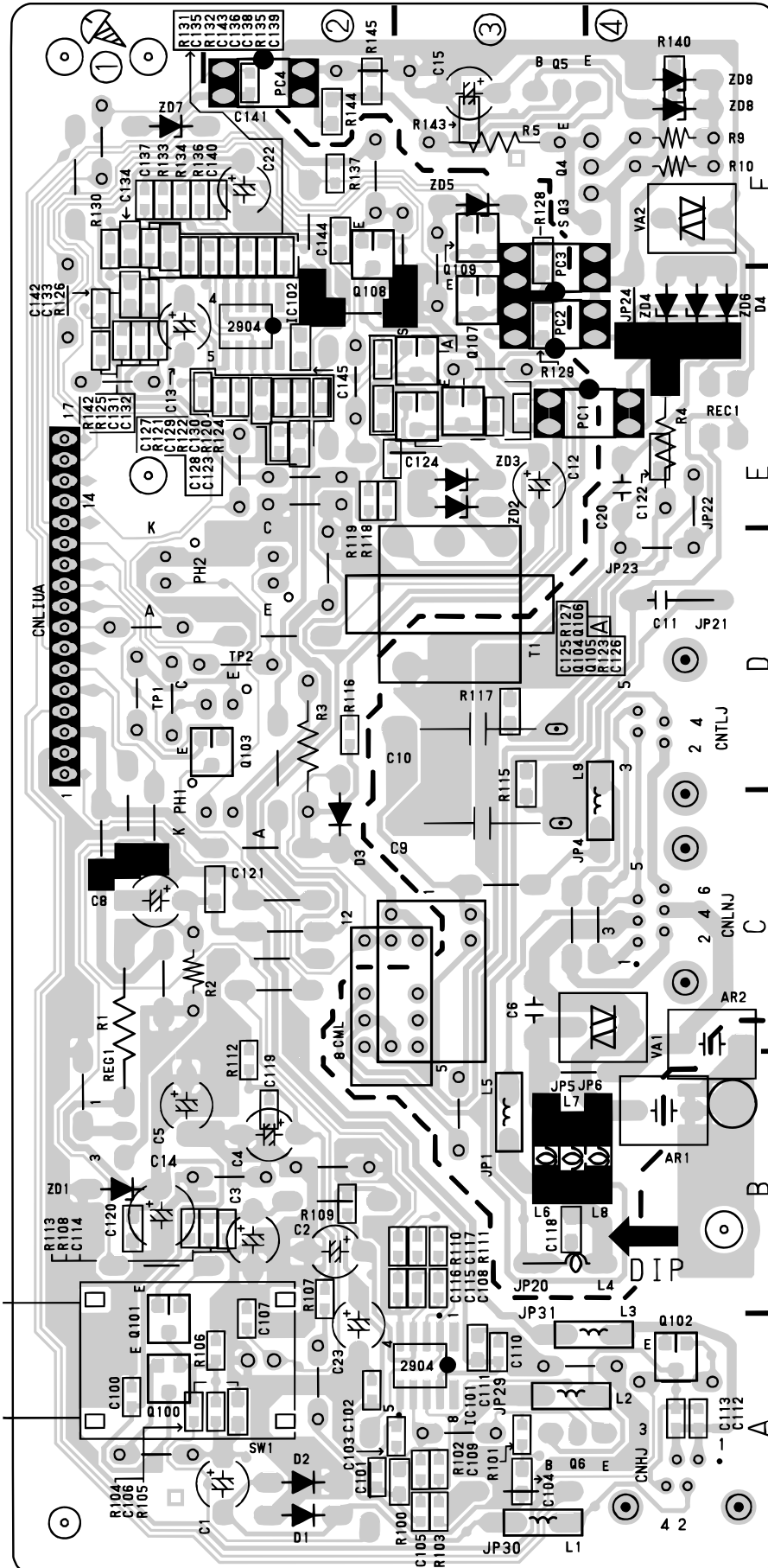
NOTE:
 These marks are all safety-critical parts.



TEL/LIU PWB parts layout (Top side)

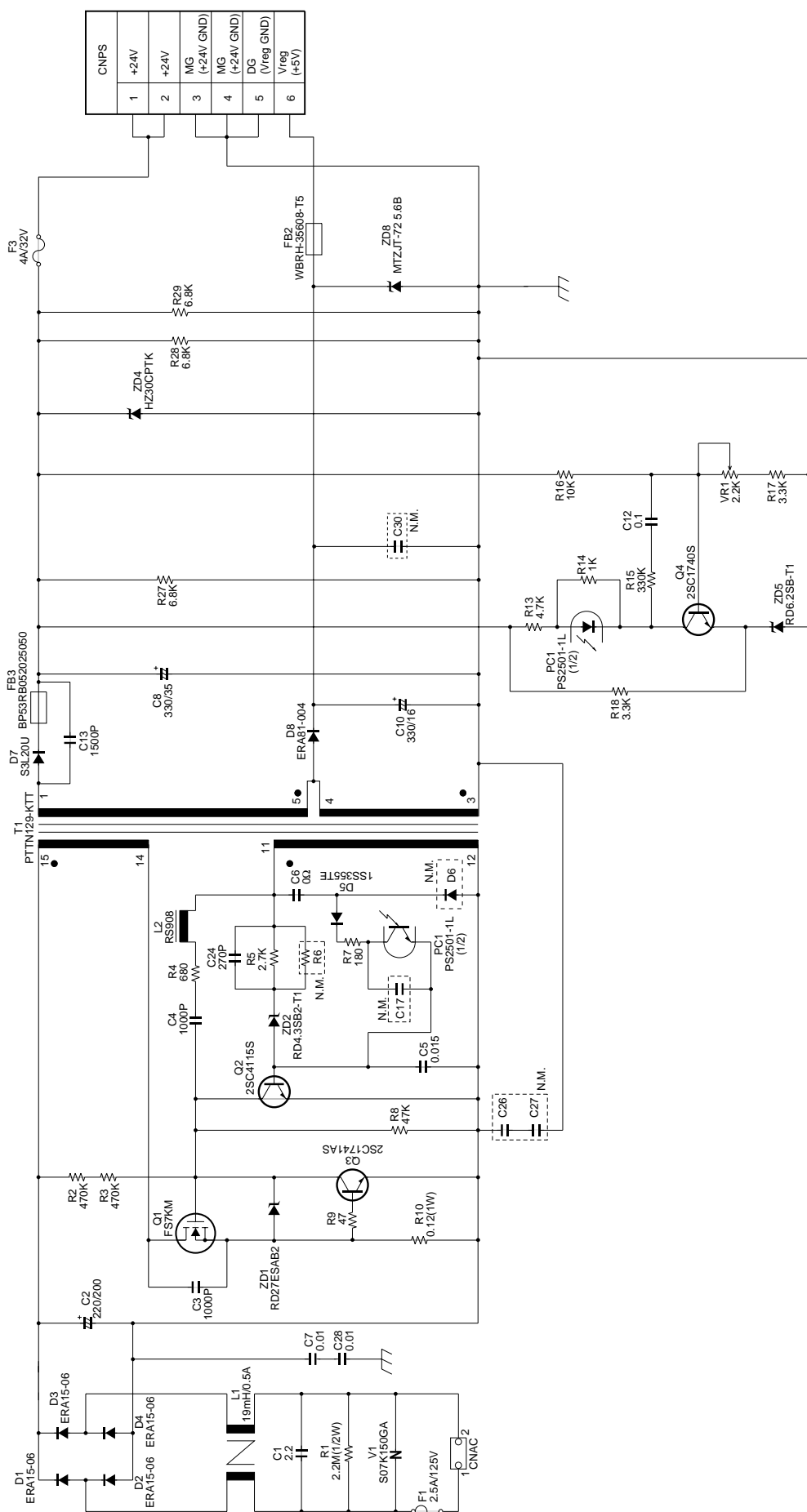


TEL/LIU PWB parts layout (Bottom side)

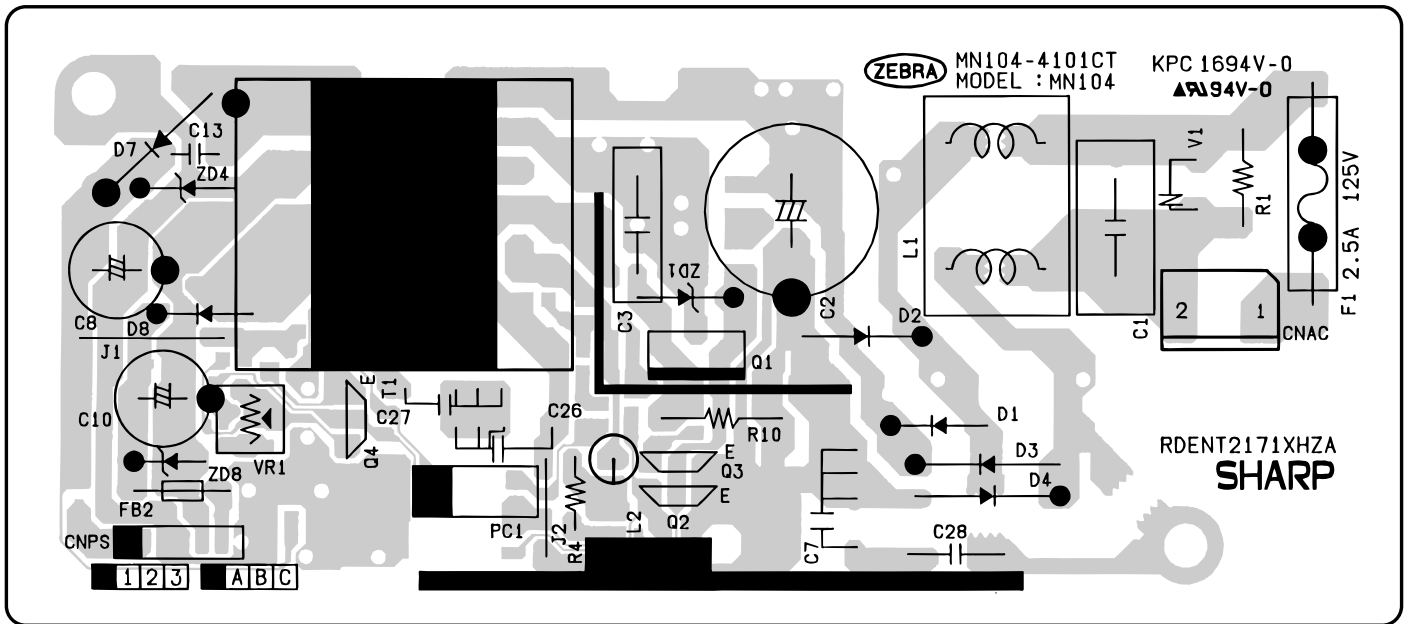


[3] Power supply PWB circuit

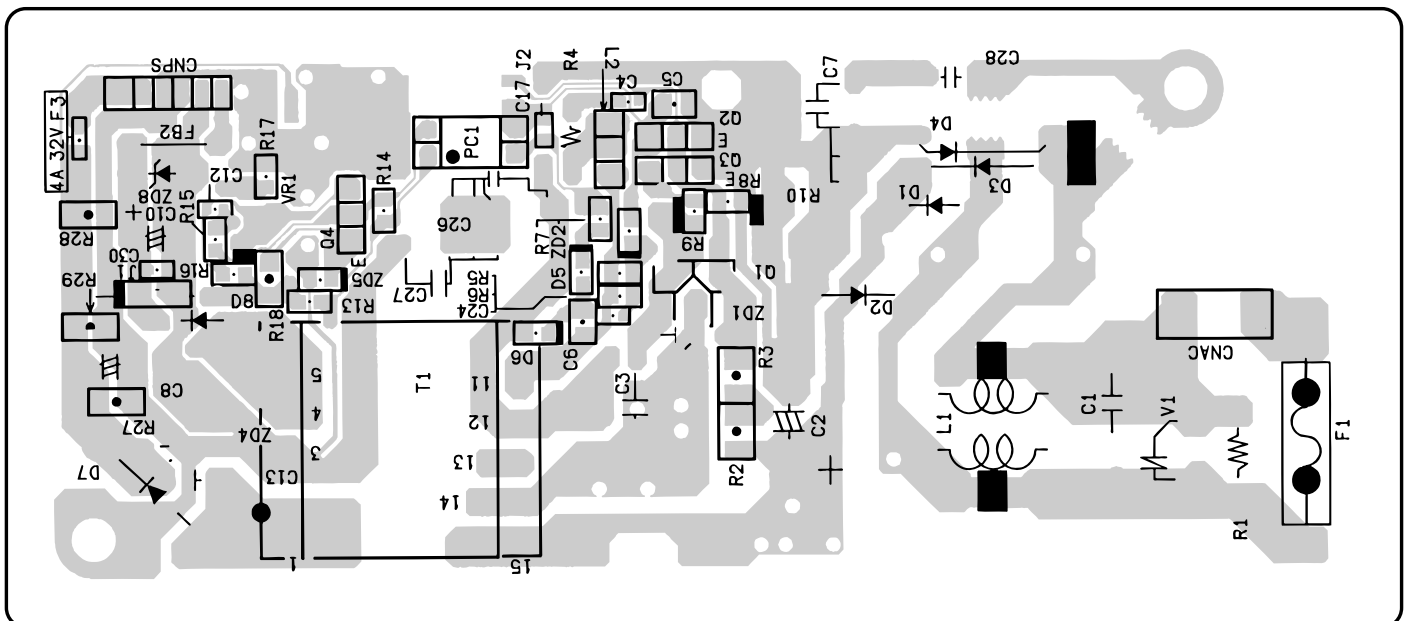
1/1



Power supply PWB parts layout (Top side)



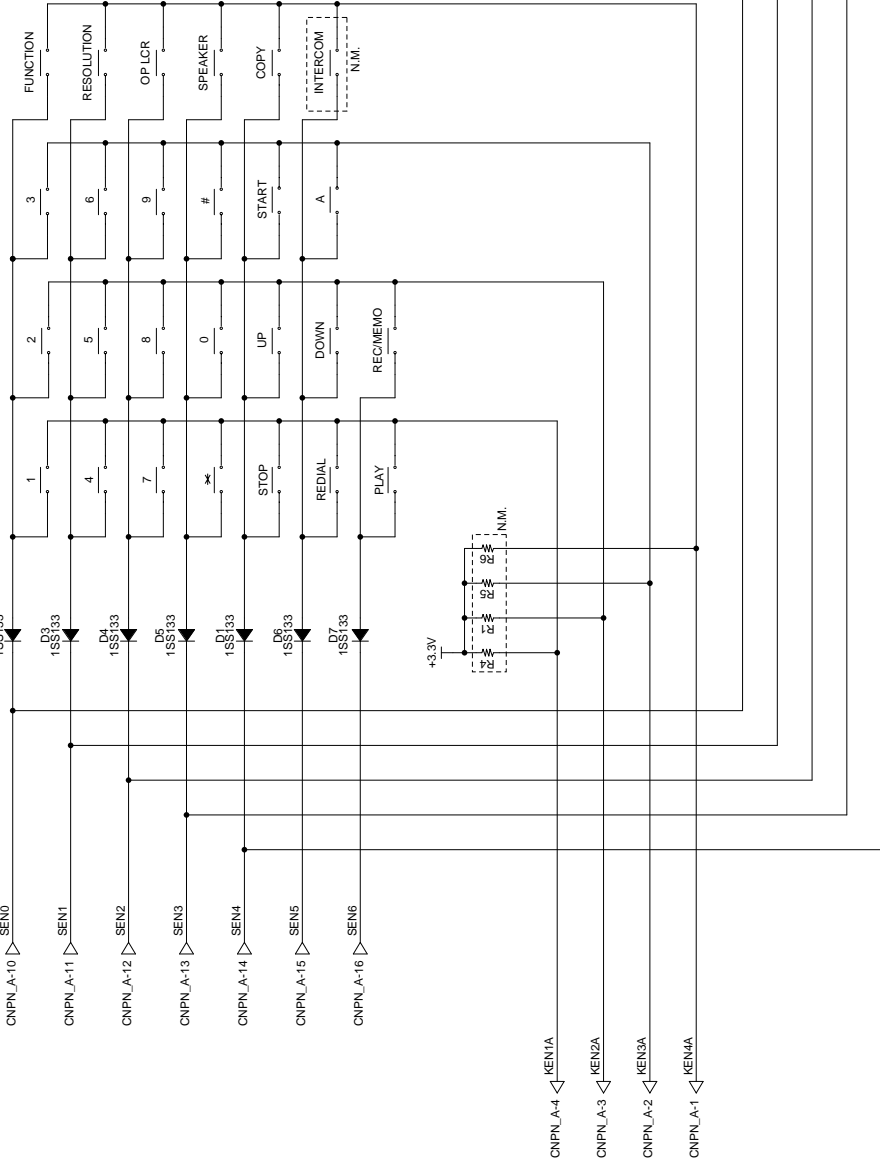
Power supply PWB parts layout (Bottom side)



[4] Operation Panel PWB circuit

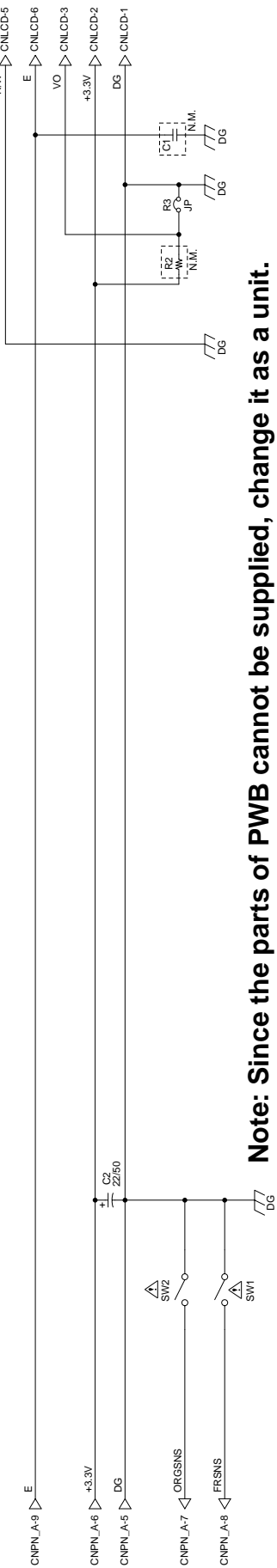
1/1

NOTE:
△ These marks are all safety-critical parts.



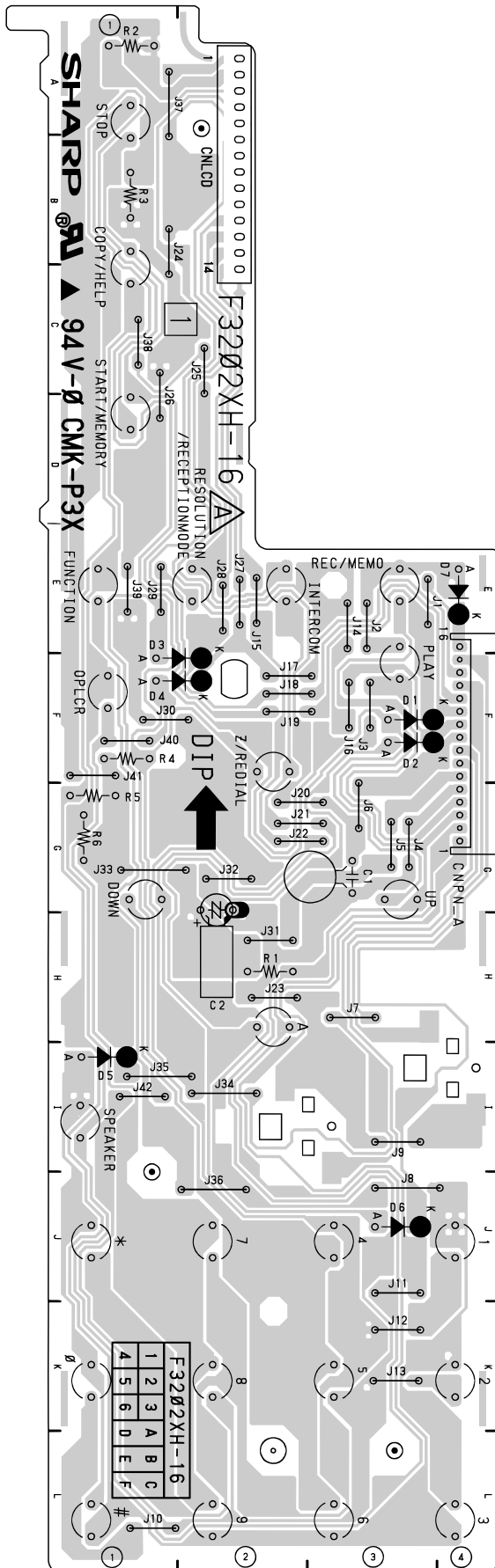
CNPN-A	
1	KEN4A
2	KEN3A
3	KEN2A
4	KEN1A
5	DG
6	+3.3V
7	ORGSNS-
8	FRSNS-
9	E
10	SEN0
11	SEN1
12	SEN2
13	SEN3
14	SEN4
15	SEN5
16	SEN6

CNPN	
1	DG
2	+3.3V
3	VO
4	RS
5	R/W
6	E
7	N.C.
8	N.C.
9	N.C.
10	N.C.
11	LD0
12	LD1
13	LD2
14	LD3

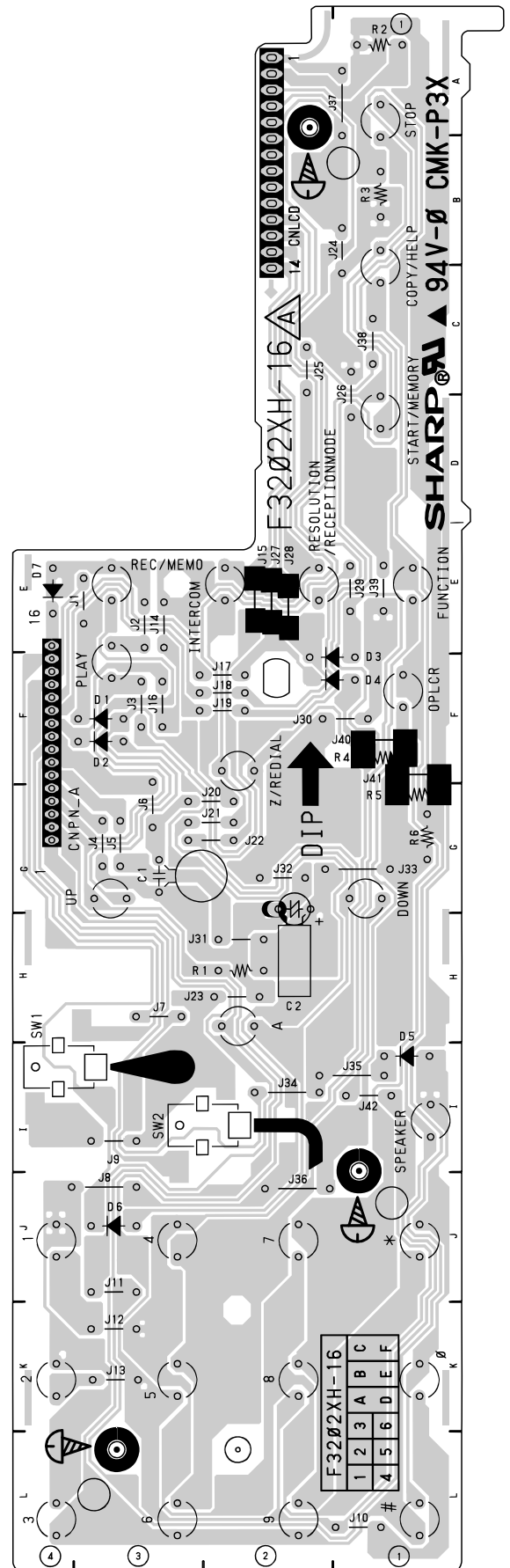


Note: Since the parts of PWB cannot be supplied, change it as a unit.

Operation panel PWB parts layout (Top side)

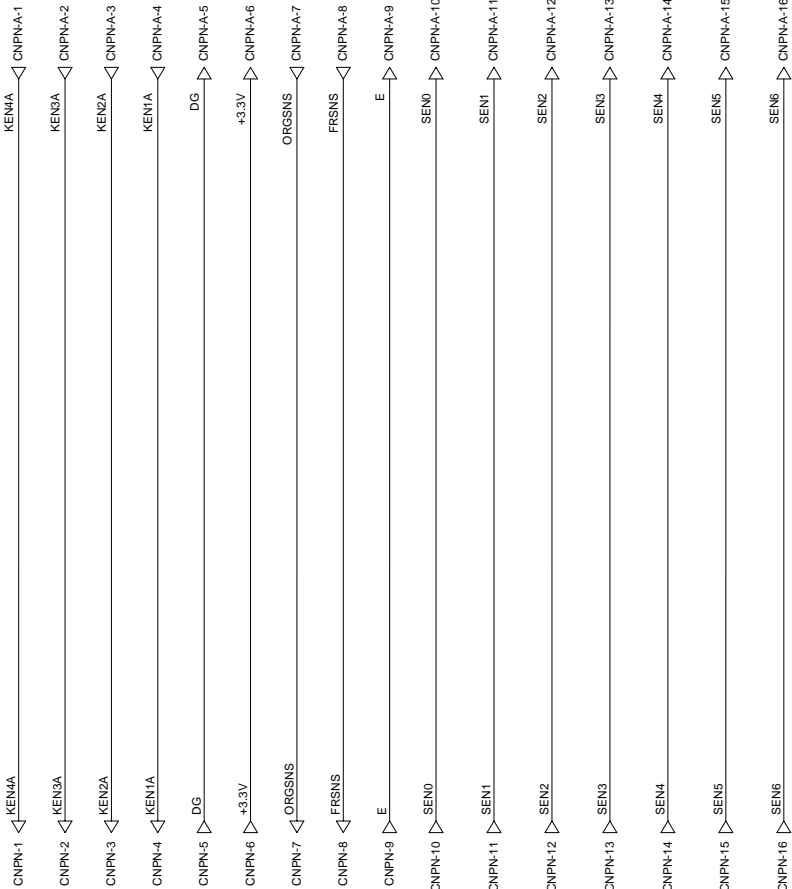


Operation panel PWB parts layout (Bottom side)



Note: Since the parts of PWB cannot be supplied, change it as a unit.

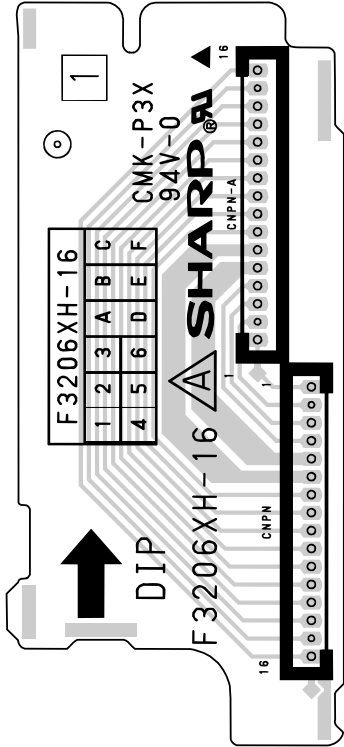
[5] Interface PWB circuit



CNPN	
1	KEN4A
2	KEN3A
3	KEN2A
4	KEN1A
5	DG
6	+3.3V
7	ORGSNS-
8	FRSNS-
9	E
10	SEN0
11	SEN1
12	SEN2
13	SEN3
14	SEN4
15	SEN5
16	SEN6

CNPN-A	
1	KEN4A
2	KEN3A
3	KEN2A
4	KEN1A
5	DG
6	+3.3V
7	ORGSNS-
8	FRSNS-
9	E
10	SEN0
11	SEN1
12	SEN2
13	SEN3
14	SEN4
15	SEN5
16	SEN6

Interface PWB parts layout



SHARP PARTS GUIDE

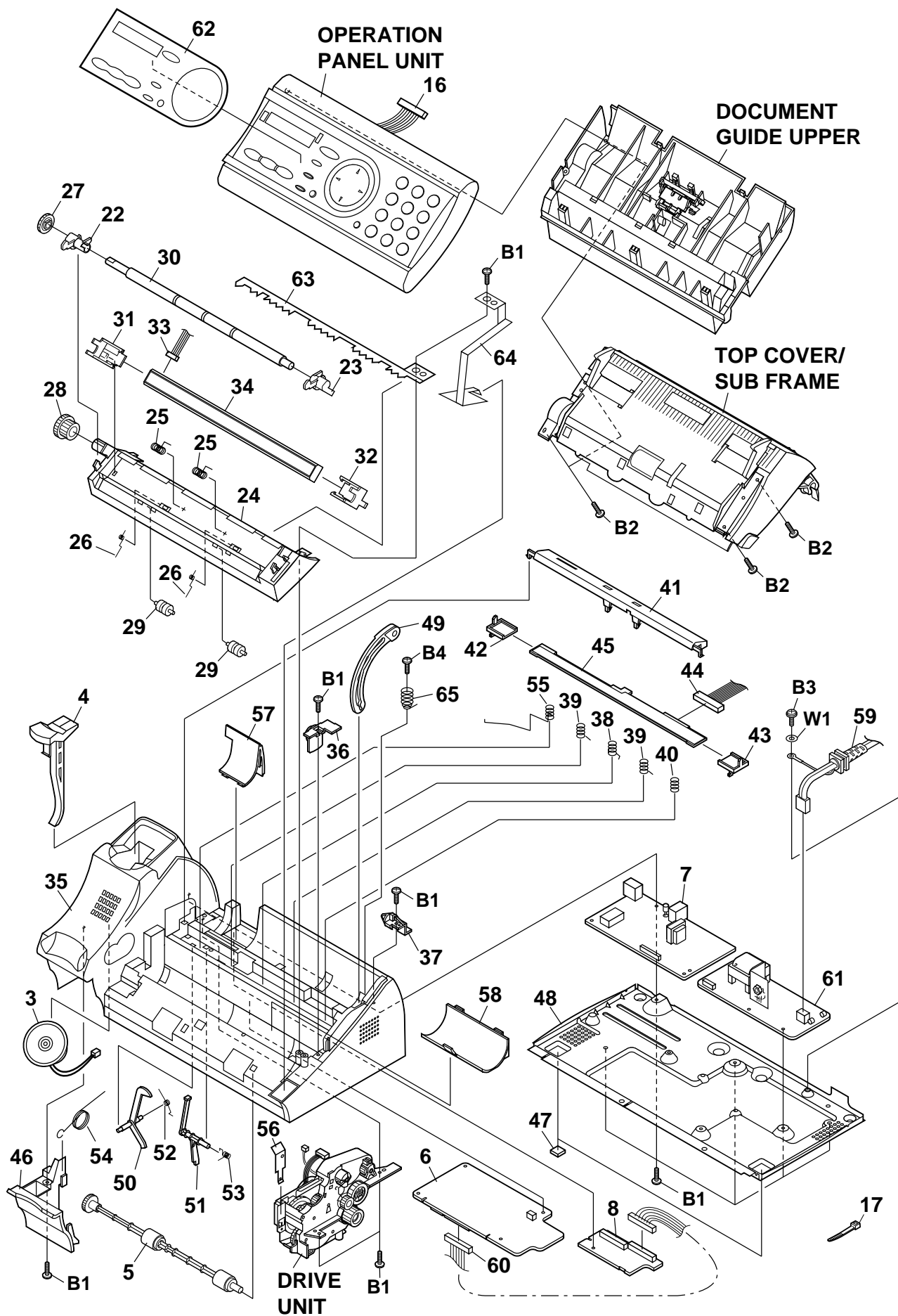
MODEL UX-A255

SELECTION CODE	DESTINATION
UX-A255U	U.S.A.

CONTENTS

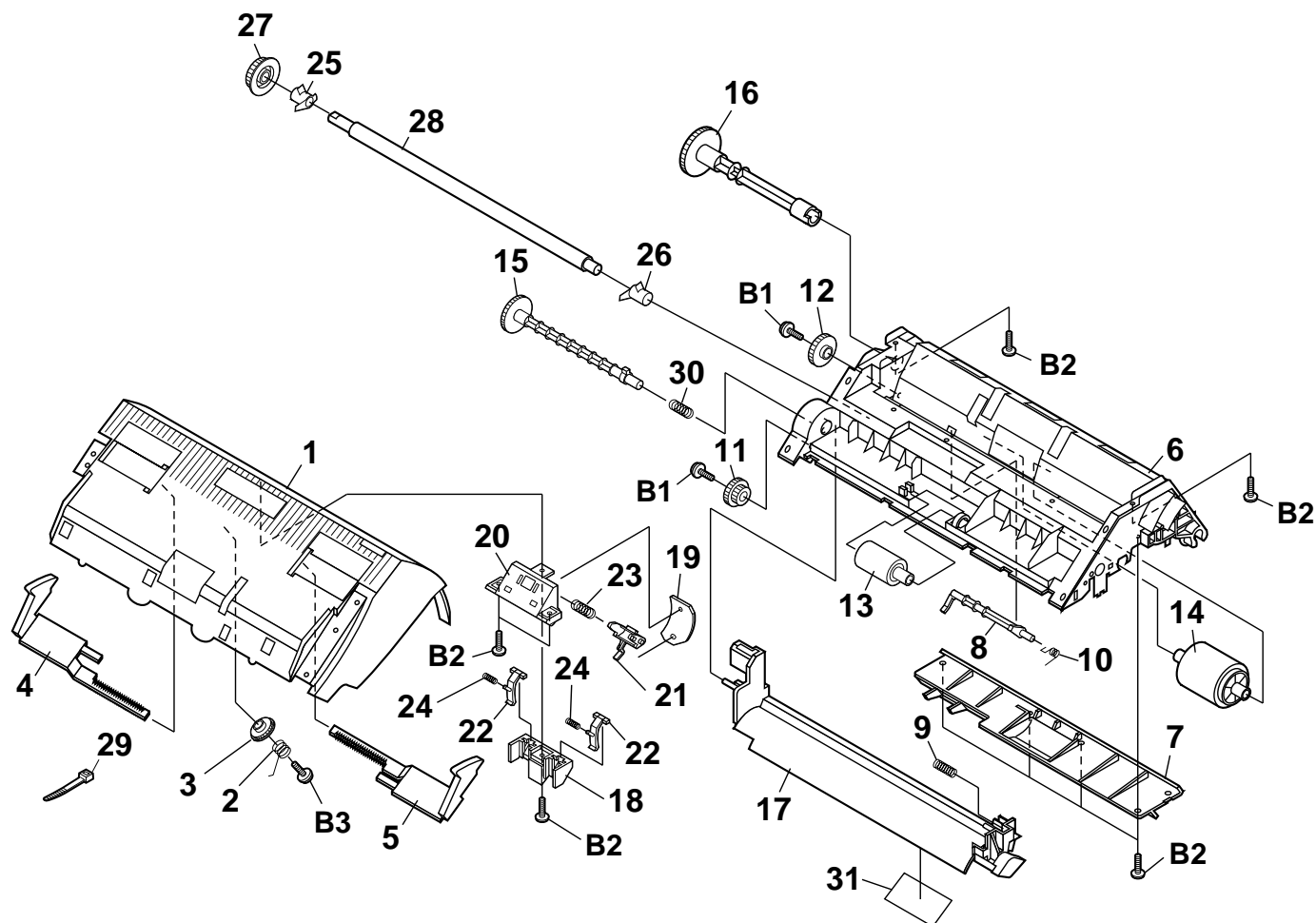
- | | |
|--------------------------------------|----------------------------|
| 1 Cabinet, etc. | 6 Control PWB unit |
| 2 Top cover/Sub frame | 7 TEL/LIU PWB unit |
| 3 Upper cabinet/Document guide upper | 8 Power supply PWB unit |
| 4 Drive unit | 9 Operation panel PWB unit |
| 5 Packing material & Accessories | 10 Interface PWB unit |
- Index

Because parts marked with "△" are indispensable for the machine safety maintenance and operation, it must be replaced with the parts specific to the product specification.



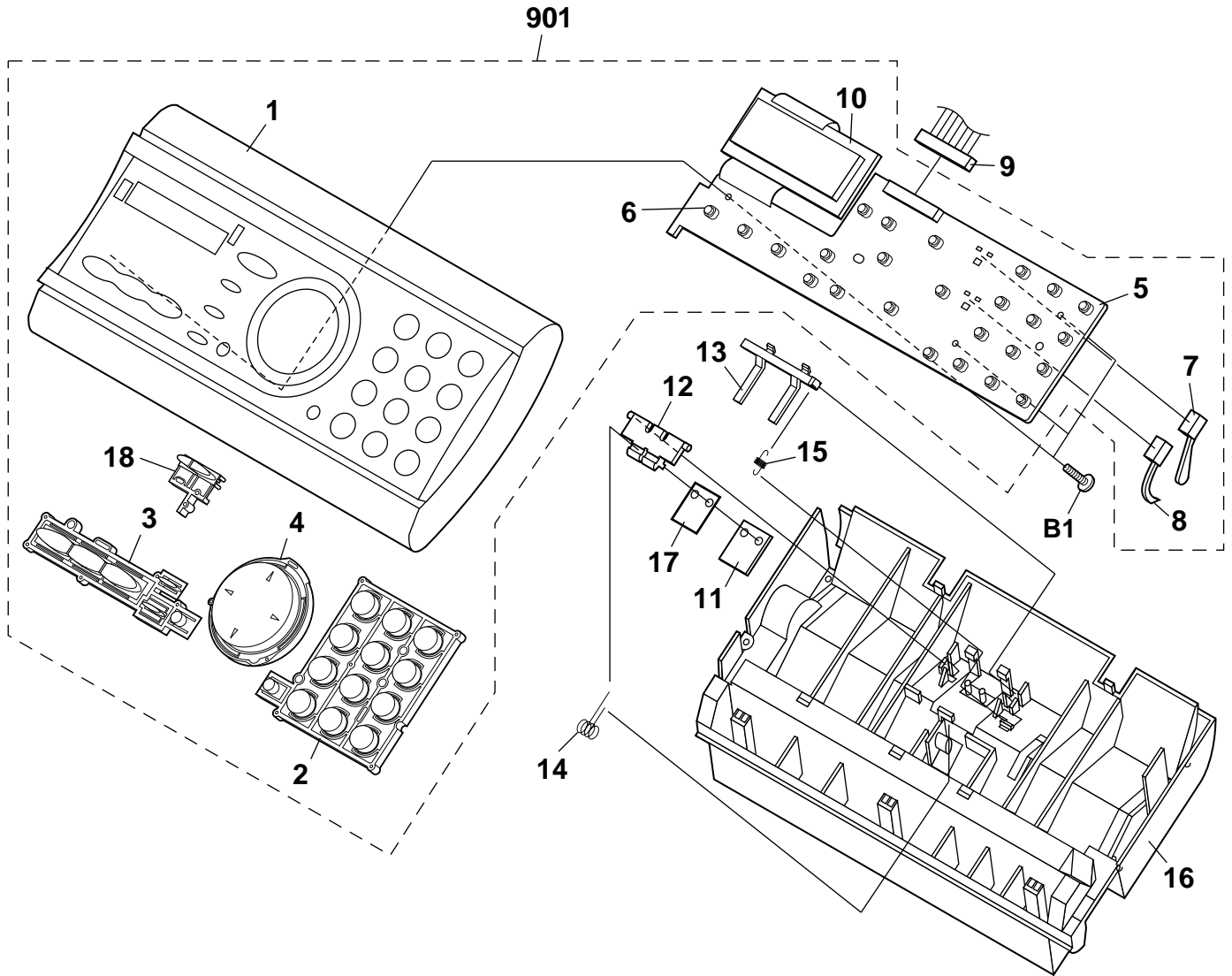
[illegible]

[2] Top cover/Sub frame



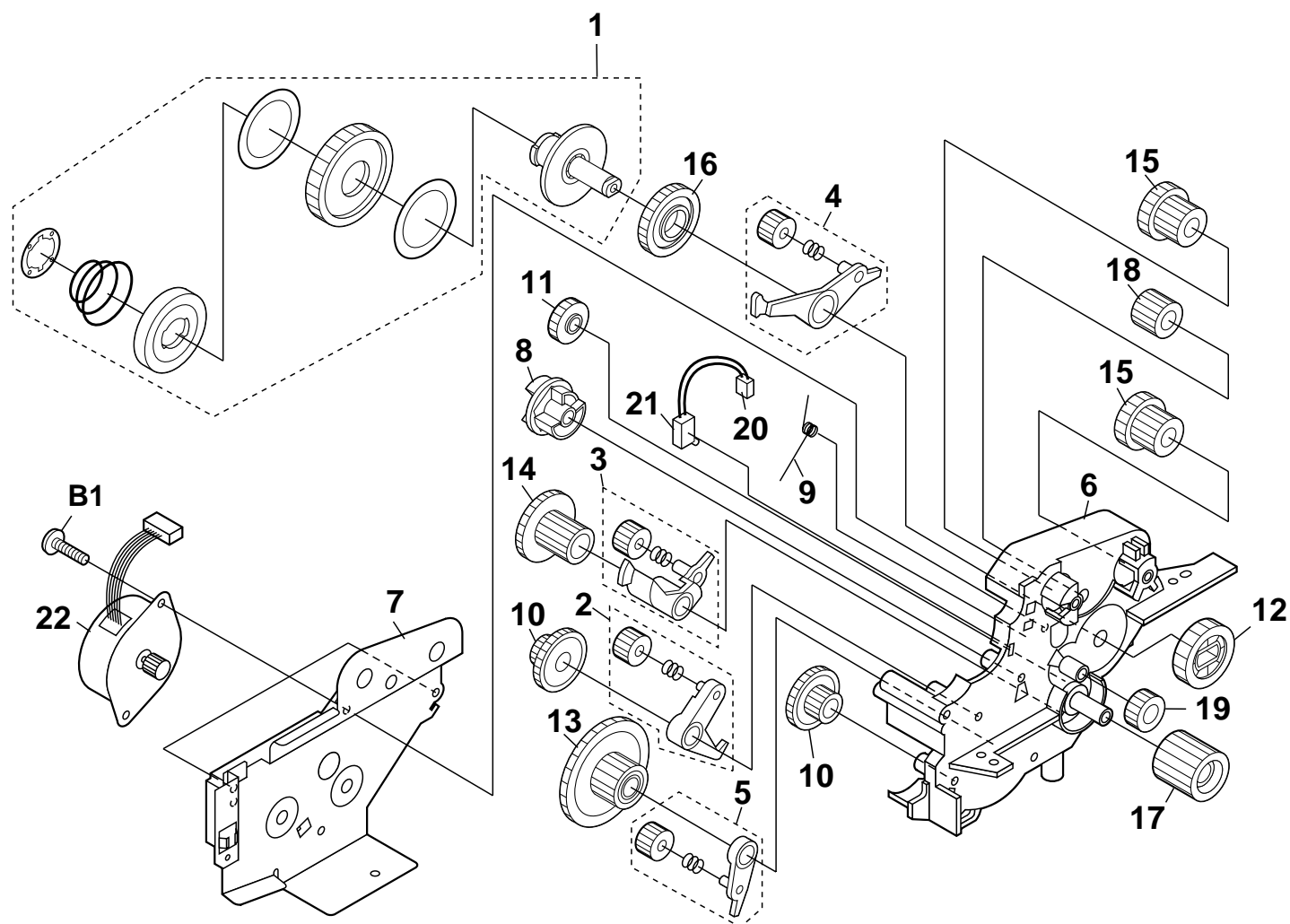
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[2] Top cover/Sub frame					
1	GCOVA2448XHSA	AG		C	Top cover
2	MSPRC3301XHZZ	AB		C	Hopper spring
3	NGERP2318XHZZ	AD		C	Pinion gear
4	PGIDM2619XHSA	AF		C	Hopper guide,left
5	PGIDM2620XHSA	AF		C	Hopper guide,right
6	LFRM-2227XHZZ	AQ		C	Sub frame
7	LFRM-2232XHZZ	AT		C	Sub frame plate
8	MLEVP2363XHZZ	AD		C	P-IN sensor lever,upper
9	MSPRC3305XHZZ	AB		C	Release lever spring
10	MSPRD3302XHZZ	AB		C	P-IN sensor lever spring,upper
11	NGERH2580XHZZ	AC		C	Reduction gear,15/22Z
12	NGERH2581XHZZ	AC		C	Idler gear,25Z
13	NROLR2483XHZZ	AL		C	Paper feed roller
14	NROLR2484XHZZ	AL		C	PU roller
15	NSFTP2357XHZZ	AG		C	Paper feed roller shaft
16	NSFTP2358XHZZ	AG		C	PU roller shaft
17	PGIDM2621XHSA	AF		C	Release lever
18	LHLDZ2224XHZZ	AL		C	RP feed plate holder
19	LPLTG3181XHZZ	AD		C	RP separate rubber
20	LPLTP3179XHZZ	AD		C	RP separate base
21	LPLTP3180XHZZ	AH		C	RP separate plate
22	LPLTP3182XHZZ	AH		C	RP feed plate
23	MSPRC3299XHZZ	AB		C	RP separate spring
24	MSPRC3300XHZZ	AB		C	RP feed spring
25	LBSHP2141XHZZ	AC		C	Platen bearing,left
26	LBSHP2142XHZZ	AC		C	Platen bearing,right
27	NGERH2579XHZZ	AD		C	Platen gear
28	NROLR2485XHZZ	AQ		C	Platen roller
29	LBNDJ2006XHZZ	AA		C	Band
30	MSPRC3335XHZZ	AD		C	Paper feed roller spring
31	TLABH319DXHZZ	AD		D	Imaging film set label
B1	LX-BZ2234XHZZ	AD		C	Screw
B2	XEBSD30P10000	AA		C	Screw(3x10)
B3	LX-BZ2222XHZZ	AC		C	Screw

[3] Upper cabinet/Document guide upper



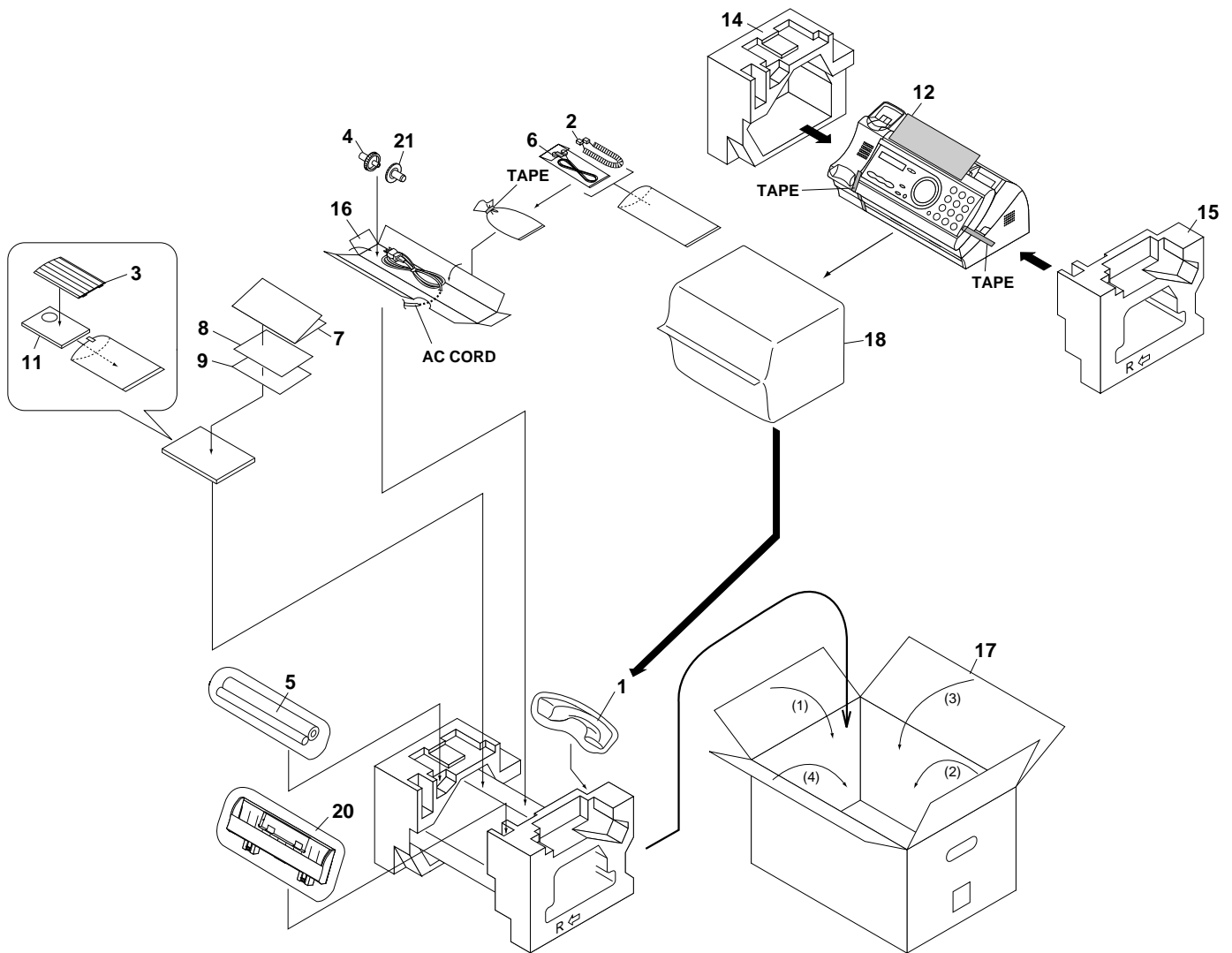
NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[3] Upper cabinet/Document guide upper					
1	GCASP2145XHSB	AQ	N	D	Panel case
2	JBTN-2339XHSA	AF		C	12 key
3	JBTN-2340XHSA	AD		C	Start key
4	JBTN-2341XHSA	AD		C	Function key
5	DCEKP336CXH04	AY	N	E	Operation panel PWB unit
6	QSW-K0005AWZZ	AC		C	Tact switch [SW]
7	QSW-M2246AXZZ	AH		C	FRSNS sensor [SW1]
8	QSW-M2294XHZZ	AE		C	ORGSNS sensor [SW2]
9	QCNWN487AXHZZ	AL		C	Panel cable
10	RUNTZ2080XH01	BA		E	LCD unit
11	LPLTG2911XHZZ	AE		C	Separate rubber
12	LPLTP3175XHZZ	AD		C	Separate plate
13	LPLTP3176XHZZ	AD		C	Feed plate
14	MSPRD3293XHZZ	AB		C	Separate spring
15	MSPRT3294XHZZ	AB		C	Feed spring
16	PGIDM2614XHSA	AL		C	Document guide upper
17	PSHEP3660XHZZ	AE		C	Separate rubber sheet
18	JBTN-2342XHSA	AT	N	C	TAD key
B1	XEBSD20P06000 (Unit)	AA		C	Screw(2x6)
901	DCEKP334CXH05	BF	N	E	Operation panel unit

[4] Drive unit



NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[4] Drive unit					
1	CGERH2314XH04	AR		C	Slip gear ass'y
2	CLEVP2359XH01	AD		C	Planet gear lever ass'y A
3	CLEVP2360XH01	AD		C	Planet gear lever ass'y B
4	CLEVP2361XH01	AD		C	Planet gear lever ass'y C
5	CLEVP2362XH01	AD		C	Planet gear lever ass'y D
6	LFRM-2226XHZZ	AQ		C	Drive unit frame
7	LPLTM3190XHZZ	AG		C	Motor plate
8	MCAMP2028XHZZ	AE		C	Cam
9	MSPRD3298XHZZ	AE		C	Cam hold spring
10	NGERH2380XHZZ	AC		C	Reduction gear,17/36Z
11	NGERH2409XHZZ	AB		C	Idler gear,23Z
12	NGERH2571XHZZ	AD		C	Slip gear
13	NGERH2572XHZZ	AD		C	Reduction gear,25/63Z
14	NGERH2573XHZZ	AD		C	Reduction gear,20/40Z
15	NGERH2574XHZZ	AD		C	Reduction gear,15/30Z
16	NGERH2575XHZZ	AD		C	Idler gear,40Z
17	NGERH2576XHZZ	AD		C	Idler gear,21Z
18	NGERH2577XHZZ	AD		C	Idler gear,20Z
19	NGERH2582XHZZ	AC		C	Idler gear,15Z
20	QCNWN483AXHZZ	AD		C	Cam switch cable
21	QSW-F2224SCZZ	AE		C	Cam switch
22	RMOTS2175XHZZ	AX		B	Motor
B1	XEBSD30P08000	AA		C	Screw(3x8)

[5] Packing material & Accessories



NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[5] Packing material & Accessories					
1	DUNTK468BXHFW	AS		E	Handset
2	QCNWG209BXHOW	AH		C	Handset cord
3	LPLTP3184XHZZ	AH		C	Paper tray extension
4	NGERH2568XHZZ	AB		C	Imaging film gear
5	PRBNN2033SC10	AL		S	Imaging film(Initial starter film 10m)
6	QCNWG208BXHZZ	AF		C	Telephone line cord
7	TCADZ3319XHZZ	AT	N	D	Setup guide
8	TCADZ3283XHZZ	AD		D	Fax transmission sheet
9	TCADZ3282XHZZ	AD		D	Open LCR information
11	TINSE4265XHTZ	AT	N	D	Operation manual
12	TLABM309DXHZZ	AD	N	D	Pop label
14	SPAKA465CXHZZ	AF		D	Packing add.,left
15	SPAKA466CXHZZ	AF		D	Packing add.,right
16	SPAKA467CXHZZ	AD		D	Packing add.,accessories
17	CPAKC292DXH01	AV	N	D	Packing case with label
18	SPAKP474CXHZZ	AB		D	Vinyl cover
20	CPLTP3183XHR7	AN	N	C	Paper tray ass'y
21	CGERH2566XH01	AG		C	Imaging film gear ass'y

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[6] Control PWB unit					
1	UBATL2049SCZZ	AF		B	Battery(CR2032T23) [BAT1]
2	VCEAGA0JW227M	AD		C	Capacitor(6.3WV 220μF) [C1]
3	VCEAGA1EW476M	AA		C	Capacitor(25WV 47μF) [C2]
4	VCEAGA1HW106M	AA		C	Capacitor(50WV 10μF) [C3]
5	VCEAGA1HW106M	AA		C	Capacitor(50WV 10μF) [C4]
6	VCEAGA1HW106M	AA		C	Capacitor(50WV 10μF) [C6]
7	VCEAGA1HW106M	AA		C	Capacitor(50WV 10μF) [C7]
8	VCEAGA0JW227M	AD		C	Capacitor(6.3WV 220μF) [C8]
9	VCEAGA1EW476M	AA		C	Capacitor(25WV 47μF) [C9]
10	VCEAGA1HW226M	AB		C	Capacitor(50WV 22μF) [C10]
11	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C100]
12	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C105]
13	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C106]
14	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C108]
15	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C109]
16	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C110]
17	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C111]
18	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C112]
19	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C113]
20	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C114]
21	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C115]
22	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C117]
23	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C119]
24	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C121]
25	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C122]
26	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C123]
27	VCKYCY1HB103K	AA		C	Capacitor(50WV 0.01μF) [C124]
28	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C125]
29	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C126]
30	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C129]
31	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C130]
32	VCCCCY1HH220J	AA		C	Capacitor(50WV 22PF) [C131]
33	VCCCCY1HH220J	AA		C	Capacitor(50WV 22PF) [C132]
34	VCKYCY1HB103K	AA		C	Capacitor(50WV 0.01μF) [C133]
35	VCCCCY1HH221J	AA		C	Capacitor(50WV 220PF) [C134]
36	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C135]
37	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C138]
38	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C139]
39	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C140]
40	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C141]
41	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C142]
42	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C143]
43	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C144]
44	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C145]
45	VCCCCY1HH200J	AA		C	Capacitor(50WV 20PF) [C146]
46	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C147]
47	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C148]
48	VCCCCY1HH200J	AA		C	Capacitor(50WV 20PF) [C149]
49	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C150]
50	VCKYCY1HB472K	AA		C	Capacitor(50WV 4700PF) [C151]
51	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C156]
52	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C159]
53	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C160]
54	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C162]
55	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C163]
56	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF) [C164]
57	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C165]
58	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C166]
59	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C167]
60	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C168]
61	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C169]
62	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C170]
63	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C171]
64	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C176]
65	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C177]
66	VCKYCY1AB105K	AB	N	C	Capacitor(10WV 1.0μF) [C179]
67	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [C181]
68	VCKYCY1AB105K	AB	N	C	Capacitor(10WV 1.0μF) [C182]
69	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [C186]
70	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF) [C187]
71	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF) [C188]
72	VCKYCY1AF105Z	AC		C	Capacitor(10WV 1μF) [C189]
73	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C192]
74	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C193]
75	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C194]
76	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C195]
77	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C196]
78	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C197]
79	VCCCCY1HH101J	AA		C	Capacitor(50WV 100PF) [C198]
80	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C199]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[6] Control PWB unit					
81	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C200]
82	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C207]
83	VCKYCY1AB105K	AB	N	C	Capacitor(10WV 1.0μF) [C208]
84	VCKYCY1HB471K	AB		C	Capacitor(50WV 470PF) [C211]
85	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C212]
86	QCNCM7014SC0G	AB		C	Connector(7pin) [CNCIS]
87	QCNCM7014SC0B	AD		C	Connector(2pin) [CNCSW]
88	QCNCM2508SC1D	AF	N	C	Connector(14pin) [CNLIUA]
89	QCNCM7014SC0F	AB		C	Connector(6pin) [CNMT]
90	QCNCM7014SC1F	AD		C	Connector(16pin) [CNPIN]
91	QCNCM7014SC0C	AA		C	Connector(3pin) [CNPRG]
92	QCNCM2638SC0F	AE		C	Connector(6pin) [CNPW]
93	QCNCM2401SC0B	AA		C	Connector(2pin) [CNSP]
94	QCNCM7014SC1E	AC		C	Connector(15pin) [CNTH]
95	VHDHRW0202B-1	AD		B	Diode(HRW0202B) [D100]
96	VHD1SS355/-1	AB		B	Diode(1SS355) [D101]
97	VHD1SS355/-1	AB		B	Diode(1SS355) [D102]
98	VHD1SS355/-1	AB		B	Diode(1SS355) [D103]
99	QFS-P2010SCZZ	AD		A	IC protector(KAB2402) [FU100]
100	VHIF002/TA18A	BN	N	B	IC,EPROM(2MB)(TA18A) [IC1]
101	RH-IX2168SCZZ	BB		B	IC(MSM51V4800E) [IC2]
102	VHISC214V/-1	AF	N	B	IC(SCE214V) [IC3]
103	RH-IX2270XHZZ	AL	N	B	IC(SN74LV4051ANSR) [IC5]
104	VHIKID65001AP	AE		B	IC(KID65001AP) [IC6]
105	VHINJM2113M-1	AG		B	IC(NJM2113M) [IC7]
106	VHIKM29W040-1	AV		B	IC(K9F4008W0A) [IC8]
107	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [L100]
108	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [L102]
109	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [L103]
110	VRS-CY1JB150J	AA		C	Resistor(1/16W 15Ω ±5%) [L104]
111	VSKTA1504GR-1	AC		B	Transistor(KTA1504G) [Q100]
112	VSKRC106S/-1	AD		B	Transistor(KRC106S) [Q102]
113	VSKRC102S/-1	AB		B	Transistor(KRC102S) [Q103]
114	VSKRC102S/-1	AB		B	Transistor(KRC102S) [Q104]
115	VSKRC102S/-1	AB		B	Transistor(KRC102S) [Q105]
116	VSSI4431DY+-1	AF		B	FET(SI4431DY) [Q108]
117	VSKRC102S/-1	AB		B	Transistor(KRC102S) [Q110]
118	VSKRA102S/-1	AD		B	Transistor(KRA102S) [Q111]
119	VRS-CY1JB562J	AA		C	Resistor(1/16W 5.6KΩ ±5%) [R100]
120	VRS-CY1JB103J	AA		C	Resistor(1/16W 10KΩ ±5%) [R101]
121	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R102]
122	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R103]
123	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R104]
124	VRS-CY1JB471J	AA		C	Resistor(1/16W 470Ω ±5%) [R105]
125	VRS-CY1JB471J	AA		C	Resistor(1/16W 470Ω ±5%) [R106]
126	VRS-CY1JB103J	AA		C	Resistor(1/16W 10KΩ ±5%) [R107]
127	VRS-CY1JB471J	AA		C	Resistor(1/16W 470Ω ±5%) [R108]
128	VRS-CY1JB103J	AA		C	Resistor(1/16W 10KΩ ±5%) [R112]
129	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R113]
130	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R116]
131	VRS-CY1JB151J	AA		C	Resistor(1/16W 150Ω ±5%) [R117]
132	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R118]
133	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R119]
134	VRS-CY1JB512J	AA		C	Resistor(1/16W 5.1KΩ ±5%) [R120]
135	VRS-CY1JB154J	AA		C	Resistor(1/16W 150KΩ ±5%) [R121]
136	VRS-CY1JB104J	AA		C	Resistor(1/16W 100KΩ ±5%) [R122]
137	VRS-CY1JB224J	AA		C	Resistor(1/16W 220KΩ ±5%) [R124]
138	VRS-CY1JB103J	AA		C	Resistor(1/16W 10KΩ ±5%) [R125]
139	VRS-CY1JB513J	AA		C	Resistor(1/16W 51KΩ ±5%) [R127]
140	VRS-CY1JB224J	AA		C	Resistor(1/16W 220KΩ ±5%) [R128]
141	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R129]
142	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R130]
143	VRS-CY1JB153J	AA		C	Resistor(1/16W 15KΩ ±5%) [R131]
144	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R132]
145	VRS-CY1JB105J	AA		C	Resistor(1/16W 1.0MΩ ±5%) [R133]
146	VRS-CY1JB221J	AA		C	Resistor(1/16W 220Ω ±5%) [R134]
147	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R135]
148	VRS-CY1JB302J	AA		C	Resistor(1/16W 3KΩ ±5%) [R136]
149	VRS-CY1JB203J	AA		C	Resistor(1/16W 20KΩ ±5%) [R137]
150	VRS-CY1JB224J	AA		C	Resistor(1/16W 220KΩ ±5%) [R139]
151	VRS-CY1JB474J	AA		C	Resistor(1/16W 470KΩ ±5%) [R140]
152	VRS-CY1JB155J	AA		C	Resistor(1/16W 1.5MΩ ±5%) [R141]
153	VRS-CY1JB204J	AA		C	Resistor(1/16W 200KΩ ±5%) [R142]
154	VRS-CY1JB393J	AA		C	Resistor(1/16W 39KΩ ±5%) [R143]
155	VRS-CY1JB243J	AA		C	Resistor(1/16W 24KΩ ±5%) [R144]
156	VRS-CY1JB622J	AA		C	Resistor(1/16W 6.2KΩ ±5%) [R145]
157	VRS-CY1JB913J	AA		C	Resistor(1/16W 91KΩ ±5%) [R146]
158	VRS-CY1JB104J	AA		C	Resistor(1/16W 100KΩ ±5%) [R149]
159	VRS-CY1JB474J	AA		C	Resistor(1/16W 470KΩ ±5%) [R150]
160	VRS-CY1JB104J	AA		C	Resistor(1/16W 100KΩ ±5%) [R151]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[6] Control PWB unit					
161	VRS-CY1JB203J	AA		C	Resistor(1/16W 20KΩ ±5%) [R152]
162	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R153]
163	VRS-CY1JB222J	AA		C	Resistor(1/16W 2.2KΩ ±5%) [R154]
164	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R155]
165	VRS-CY1JB103J	AA		C	Resistor(1/16W 10KΩ ±5%) [R156]
166	VRS-CY1JB106J	AA		C	Resistor(1/16W 10MΩ ±5%) [R157]
167	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [R163]
168	VRS-CY1JB105J	AA		C	Resistor(1/16W 1.0MΩ ±5%) [R164]
169	VRS-CY1JB682J	AA		C	Resistor(1/16W 6.8KΩ ±5%) [R165]
170	VRS-CY1JB203J	AA		C	Resistor(1/16W 20KΩ ±5%) [R166]
171	VRS-CY1JB472J	AA		C	Resistor(1/16W 4.7KΩ ±5%) [R167]
172	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R168]
173	VRS-CY1JB124J	AA		C	Resistor(1/16W 120KΩ ±5%) [R171]
174	VRS-CY1JB223J	AA		C	Resistor(1/16W 22KΩ ±5%) [R172]
175	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R173]
176	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R174]
177	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R175]
178	VRS-CY1JB471J	AA		C	Resistor(1/16W 470Ω ±5%) [R178]
179	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R179]
180	VRS-CY1JB393J	AA		C	Resistor(1/16W 39KΩ ±5%) [R180]
181	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R183]
182	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R186]
183	VRS-CY1JB101J	AA		C	Resistor(1/16W 100Ω ±5%) [R187]
184	VRS-CY1JB271J	AA		C	Resistor(1/16W 270Ω ±5%) [R189]
185	VRS-CY1JB151J	AA		C	Resistor(1/16W 150Ω ±5%) [R190]
186	VRS-CY1JB151J	AA		C	Resistor(1/16W 150Ω ±5%) [R191]
187	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R192]
188	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R193]
189	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R195]
190	RR-TZ3018SCZZ	AC		C	Block resistor(470Ωx4) [RA1]
191	RR-TZ3018SCZZ	AC		C	Block resistor(470Ωx4) [RA2]
192	RR-TZ3018SCZZ	AC		C	Block resistor(470Ωx4) [RA3]
193	RR-TZ3017SCZZ	AC		C	Block resistor(270Ωx4) [RA4]
194	VHIS814A33AUC	AH		B	IC(S-814A33AUC-BCX-T2) [REG1]
195	RCRSP2176SCZZ	AG		B	Crystal(32.256MHz) [X1]
196	RCRSB0297AFZZ	AD		B	Crystal(32.768kHz) [X2]
197	VHE1N4748A/-1	AC		B	Diode(1N4748A) [ZD1]
198	VHE02CZ180Y-1	AC		B	Zener diode(02CZ180Y) [ZD100]
	(Unit)				
901	DCEKC282RXHZZ	BU	N	E	Control PWB unit(Within ROM)
[7] TEL/LIU PWB unit					
1	VHVERZV5D471/	AC		B	Varistor(ERZV5D471) [AR1]
2	VHVERZV5D471/	AC		B	Varistor(ERZV5D471) [AR2]
3	VCEAGA1HW226M	AB		C	Capacitor(50WV 22μF) [C1]
4	VCEAGA1HW226M	AB		C	Capacitor(50WV 22μF) [C4]
5	VCEAGA1HW107M	AA		C	Capacitor(50WV 100μF) [C8]
6	RC-FZ3024SCZZ	AG		C	Capacitor(250WV 0.82μF) [C10]
7	VCEAGA1HW226M	AB		C	Capacitor(50WV 22μF) [C12]
8	VCEAGA1CW476M	AB		C	Capacitor(16WV 47μF) [C13]
9	VCEAGA1HW226M	AB		C	Capacitor(50WV 22μF) [C14]
10	VCKYPA1HB103K	AA		C	Capacitor(50WV 0.01μF) [C20]
11	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C101]
12	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C102]
13	VCCCCY1HH221J	AA		C	Capacitor(50WV 220PF) [C103]
14	VCKYCY1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C104]
15	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C109]
16	VCKYTV1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C111]
17	VCKYCY1HB222K	AA		C	Capacitor(50WV 2200PF) [C112]
18	VRS-CY1JB822J	AA		C	Resistor(1/16W 8.2KΩ ±5%) [C115]
19	VCCCCY1HH221J	AA		C	Capacitor(50WV 220PF) [C117]
20	VCKYTV1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C120]
21	VCKYTV1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C121]
22	VCKYTV1HF104Z	AA		C	Capacitor(50WV 0.1μF) [C123]
23	VCKYCY1HB102K	AA		C	Capacitor(50WV 1000PF) [C124]
24	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [C127]
25	VCCCCY1HH330J	AA		C	Capacitor(50WV 33PF) [C130]
26	VCKYCY1HB821K	AA		C	Capacitor(50WV 820PF) [C137]
27	VCCCCY1HH330J	AA		C	Capacitor(50WV 33PF) [C139]
28	VCKYCY1CB104K	AB		C	Capacitor(16WV 0.1μF) [C142]
29	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [C143]
30	VCKYTV1CF105Z	AB		C	Capacitor(10WV 1μF) [C144]
31	VCKYTV1CF105Z	AB		C	Capacitor(10WV 1μF) [C145]
32	RRLYD3433XHZZ	AH		B	Relay(QUAZ-SH-124DZ) [CML]
33	QJAKZ2079XH0D	AD		C	Jack [CNHJ]
34	QCNCW715PAFZZ	AG	N	C	Connector(14pin) [CNLIUA]
35	QJAKZ2073SCFB	AD		C	Jack [CNLNUJ]
36	VHDDSS133/-1	AA		B	Diode(1SS133) [D3]
37	VHDDSS133/-1	AA		B	Diode(1SS133) [D4]
38	VHINJM2904M-2	AG		B	IC(NJM2904M) [IC101]

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
[7] TEL/LIU PWB unit					
39	VHINJM2904M-2	AG		B	IC(NJM2904M) [IC102]
40	VRS-HT3AA510J	AA		C	Resistor(1W 51Ω ±5%) [JP21]
41	VHPPC817X4/-1	AC		B	Photo coupler(PC817X4) [PC1]
42	VHPSG206S/-1	AG		B	Photo transistor(SG206S) [PH1]
43	VHPSG206S/-1	AG		B	Photo transistor(SG206S) [PH2]
44	VSKRA102M/-3	AD		B	Transistor(KRA102M) [Q6]
45	VSKTC3875GR-1	AB		B	Transistor(KTC3875GR) [Q100]
46	VSKRC106S/-1	AD		B	Transistor(KRC106S) [Q101]
47	VSKRC106S/-1	AD		B	Transistor(KRC106S) [Q102]
48	VSKRC106S/-1	AD		B	Transistor(KRC106S) [Q103]
49	VRD-HT2EY101J	AA		C	Resistor(1/4W 100Ω ±5%) [R2]
50	VRS-RE3AA122J	AC		C	Resistor(1W 1.2KΩ ±5%) [R3]
51	VRD-HT2HY223J	AA		C	Resistor(1/2W 22KΩ ±5%) [R4]
52	VRS-TS2AD332J	AA		C	Resistor(1/10W 3.3KΩ ±5%) [R100]
53	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R101]
54	VRS-CY1JB163J	AA		C	Resistor(1/16W 16KΩ ±5%) [R102]
55	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R103]
56	VRS-CY1JB332J	AA		C	Resistor(1/16W 3.3KΩ ±5%) [R104]
57	VRS-TS2AD151J	AA		C	Resistor(1/10W 150Ω ±5%) [R105]
58	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R107]
59	VRS-CY1JB822J	AA		C	Resistor(1/16W 8.2KΩ ±5%) [R109]
60	VRS-CY1JB133J	AA		C	Resistor(1/16W 13KΩ ±5%) [R110]
61	VRS-CY1JB224J	AA		C	Resistor(1/16W 220KΩ ±5%) [R111]
62	VRS-CY1JB152J	AA		C	Resistor(1/16W 1.5KΩ ±5%) [R112]
63	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R113]
64	VRS-TS2AD223J	AA		C	Resistor(1/10W 22KΩ ±5%) [R117]
65	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R118]
66	VRS-CY1JB332J	AA		C	Resistor(1/16W 3.3KΩ ±5%) [R120]
67	VRS-CY1JB362J	AA		C	Resistor(1/16W 3.6KΩ ±5%) [R121]
68	VRS-TS2AD823J	AA		C	Resistor(1/10W 82KΩ ±5%) [R122]
69	VRS-CY1JB621J	AA		C	Resistor(1/16W 620Ω ±5%) [R124]
70	VRS-CY1JB102J	AA		C	Resistor(1/16W 1KΩ ±5%) [R125]
71	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R127]
72	VRS-CY1JB000J	AA		C	Resistor(1/16W 0Ω ±5%) [R132]
73	VRS-CY1JB223J	AA		C	Resistor(1/16W 22KΩ ±5%) [R133]
74	VRS-CY1JB243J	AA		C	Resistor(1/16W 24KΩ ±5%) [R134]
75	VRS-CY1JB153J	AA		C	Resistor(1/16W 15KΩ ±5%) [R135]
76	VRS-CY1JB393J	AA		C	Resistor(1/16W 39KΩ ±5%) [R136]
77	VRS-CY1JB332J	AA		C	Resistor(1/16W 3.3KΩ ±5%) [R137]
78	VRS-CY1JB822J	AA		C	Resistor(1/16W 8.2KΩ ±5%) [R142]
79	VHINJM78L05A1	AD		B	IC(NJM78L05A) [REG1]
80	QSW-Z2317XHZZ	AF		C	Hook switch [SW1]
81	RTRNI2164XHZZ	AG		B	Transformer(I2164) [T1]
82	VHVA391PV6-1	AE		B	Varistor(RA-391P-V6-2) [VA1]
83	VHEHZ2C1///-1	AA		B	Zener diode(HZ2C1) [ZD2]
84	VHEHZ2C1///-1	AA		B	Zener diode(HZ2C1) [ZD3]
85	VHEHZ27-1///-1	AB		B	Zener diode(HZ27) [ZD4]
86	VHEMTZJ100B-1	AC		B	Zener diode(MTZJ10B) [ZD5]
87	VHEMTZJ100B-1	AC		B	Zener diode(MTZJ10B) [ZD7]
	(Unit)				
901	DCEKL364CXH01	BC	N	E	TEL/LIU PWB unit
[8] Power supply PWB unit					
1	0CBUGFM224KR/	AF		C	Capacitor(275WV 2.2μF) [C1]
2	0CBUGA0291ZZ/	AC		C	Capacitor(200WV 220μF) [C2]
3	0CBUGCU102JC/	AF		C	Capacitor(1KVV 1000PF) [C3]
4	0CBUGXGCF102/	AD		C	Capacitor(50WV 1000PF) [C4]
5	0CBUGXHW153/	AF	N	C	Capacitor(50WV 0.015μF) [C5]
6	0CBUEXCAP000/	AC		C	Resistor(1/8W 0Ω ±5%) [C6]
7	0CBUGCM103BH/	AD		C	Capacitor(125WV 0.01μF) [C7]
8	0CBUGA0315ZZ/	AL	N	C	Capacitor(35WV 330μF) [C8]
9	0CBUGA0302ZZ/	AK	N	C	Capacitor(16WV 330μF) [C10]
10	0CBUGXGFD104/	AD		C	Capacitor(25WV 0.1μF) [C12]
11	0CBUGCS152AC/	AD		C	Capacitor(500WV 1500PF) [C13]
12	0CBUGXGDF271/	AD		C	Capacitor(50WV 270PF) [C24]
13	0CBUGCM103GF/	AD	N	C	Capacitor(125WV 0.01μF) [C28]
14	0CBPKZ0194ZZ/	AC		C	Base post ass'y(2pin) [CNAC]
15	0CBPCZ0307ZZ/	AD		C	Connector(6pin) [CNPS]
16	0CBUBC0125DK/	AD		B	Diode(ERA15-06) [D1]
17	0CBUBC0125DK/	AD		B	Diode(ERA15-06) [D2]
18	0CBUBC0125DK/	AD		B	Diode(ERA15-06) [D3]
19	0CBUBC0125DK/	AD		B	Diode(ERA15-06) [D4]
20	0CBUBY0020AK/	AD		B	Diode(1SS355TE) [D5]
21	0CBUBC0336AZ/	AL		B	Diode(S3L20U-4004P15) [D7]
22	0CBUBC0070AM/	AG	N	B	Diode(ERA81-004) [D8]
23	0CBPJCSX2501/	AH		A	Current fuse(2.5A/125V) [F1]
24	0CBPZZ1008ZZ/	AH	N	A	Circuit protect chip(4A/32V) [F3]
25	0CBBFZ80078E/	AD	N	C	Beads core(WBRH-35608-T5) [FB2]
26	0CBBFZ89633Z/	AD		C	Beads inductor(BP53RB052025050) [FB3]
27	0CBUKZ0790ZZ/	AK		C	Filter(19mH/0.5A) [L1]

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PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
[C]				
CCNWN484AXH01	1-3	AL		C
CGERH2314XH04	4-1	AR		C
CGERH2566XH01	5-21	AG		C
CLEVP2358XH01	1-4	AD		C
CLEVP2359XH01	4-2	AD		C
CLEVP2360XH01	4-3	AD		C
CLEVP2361XH01	4-4	AD		C
CLEVP2362XH01	4-5	AD		C
CPAKC292DXH01	5-17	AV	N	D
CPLTP3183XHR7	5-20	AN	N	C
CROLR2481XH01	1-5	AQ		C
[D]				
DCEKC282RXHZZ	1-6	BU	N	E
"	6-901	BU	N	E
DCEKL364CXH01	1-7	BC	N	E
"	7-901	BC	N	E
DCEKP334CXH05	3-901	BF	N	E
DCEKP336CXH04	3-5	AY	N	E
"	9-901	AY	N	E
DCEKP337CXH01	1-8	AF		E
"	10-901	AF		E
DUNTK468BXHFW	5-1	AS		E
[G]				
GCABB2393XHS	1-35	AZ	N	D
GCASP2145XHSB	3-1	AQ	N	D
GCOVA2447XHSA	1-46	AF		D
GCOVA2448XHSA	2-1	AG		C
GLEGG2078XHZZ	1-47	AD		C
[H]				
HPNLH2418XHSD	1-62	AL	N	D
[J]				
JBTN-2339XHSA	3-2	AF		C
JBTN-2340XHSA	3-3	AD		C
JBTN-2341XHSA	3-4	AD		C
JBTN-2342XHSA	3-18	AT	N	C
[L]				
LBNDJ2006XHZZ	1-17	AA		C
"	2-29	AA		C
LBSHP2140XHZZ	1-22	AC		C
LBSHP2141XHZZ	2-25	AC		C
LBSHP2142XHZZ	2-26	AC		C
LBSHP2143XHZZ	1-23	AC		C
LFRM-2225XHSA	1-24	AL		C
LFRM-2226XHZZ	4-6	AQ		C
LFRM-2227XHZZ	2-6	AQ		C
LFRM-2232XHZZ	2-7	AT		C
LHLDZ2224XHZZ	2-18	AL		C
LHLDZ2227XHZZ	1-36	AD		C
LHLDZ2228XHZZ	1-37	AD		C
LPLTG2911XHZZ	3-11	AE		C
LPLTG3181XHZZ	2-19	AD		C
LPLTM3178XHZZ	1-48	AF		C
LPLTM3190XHZZ	4-7	AG		C
LPLTP3175XHZZ	3-12	AD		C
LPLTP3176XHZZ	3-13	AD		C
LPLTP3177XHZZ	1-49	AD		C
LPLTP3179XHZZ	2-20	AD		C
LPLTP3180XHZZ	2-21	AH		C
LPLTP3182XHZZ	2-22	AH		C
LPLTP3184XHZZ	5-3	AH		C
LX-BZ2222XHZZ	2-B3	AC		C
LX-BZ2234XHZZ	2-B1	AD		C
LX-BZ2282XHZZ	1-B3	AB		C
[M]				
MCAMP2028XHZZ	4-8	AE		C
MLEVP2356XHZZ	1-51	AD		C
MLEVP2357XHZZ	1-50	AD		C
MLEVP2363XHZZ	2-8	AD		C
MSPRC3287XHZZ	1-38	AB		C
MSPRC3288XHZZ	1-39	AB		C
MSPRC3295XHZZ	1-25	AB		C
MSPRC3299XHZZ	2-23	AB		C
MSPRC3300XHZZ	2-24	AB		C
MSPRC3301XHZZ	2-2	AB		C
MSPRC3305XHZZ	2-9	AB		C
MSPRC3335XHZZ	2-30	AD		C
MSPRC3340XHZZ	1-40	AD	N	C
MSPRD3285XHZZ	1-53	AB		C
MSPRD3286XHZZ	1-52	AB		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
MSPRD3291XHZZ	1-54	AD		C
MSPRD3292XHZZ	1-55	AB		C
MSPRD3293XHZZ	3-14	AB		C
MSPRD3296XHZZ	1-26	AB		C
MSPRD3298XHZZ	4-9	AE		C
MSPRD3302XHZZ	2-10	AB		C
MSPRD3341XHZZ	1-65	AD	N	C
MSPRP3297XHZZ	1-56	AD		C
MSPRT3294XHZZ	3-15	AB		C
[N]				
NGERH2380XHZZ	4-10	AC		C
NGERH2409XHZZ	4-11	AB		C
NGERH2568XHZZ	5-4	AB		C
NGERH2569XHZZ	1-27	AC		C
NGERH2570XHZZ	1-28	AD		C
NGERH2571XHZZ	4-12	AD		C
NGERH2572XHZZ	4-13	AD		C
NGERH2573XHZZ	4-14	AD		C
NGERH2574XHZZ	4-15	AD		C
NGERH2575XHZZ	4-16	AD		C
NGERH2576XHZZ	4-17	AD		C
NGERH2577XHZZ	4-18	AD		C
NGERH2579XHZZ	2-27	AD		C
NGERH2580XHZZ	2-11	AC		C
NGERH2581XHZZ	2-12	AC		C
NGERH2582XHZZ	4-19	AC		C
NGERP2318XHZZ	2-3	AD		C
NROLP2332XHZZ	1-29	AD		C
NROLR2482XHZZ	1-30	AR		C
NROLR2483XHZZ	2-13	AL		C
NROLR2484XHZZ	2-14	AL		C
NROLR2485XHZZ	2-28	AQ		C
NSFTP2357XHZZ	2-15	AG		C
NSFTP2358XHZZ	2-16	AG		C
[P]				
PBR5-2055XHZZ	1-63	AN		C
PCOVP2130XHZZ	1-41	AE		C
PCOVP2131XHSA	1-57	AD		C
PCOVP2132XHZZ	1-58	AD		C
PGIDM2614XHSA	3-16	AL		C
PGIDM2615XHZZ	1-42	AD		C
PGIDM2616XHZZ	1-43	AD		C
PGIDM2617XHZZ	1-31	AD		C
PGIDM2618XHZZ	1-32	AD		C
PGIDM2619XHSA	2-4	AF		C
PGIDM2620XHSA	2-5	AF		C
PGIDM2621XHSA	2-17	AF		C
PRBNN2033SC10	5-5	AL		S
PSHEP3660XHZZ	3-17	AE		C
PSHEZ3687XHZZ	1-64	AD		C
[Q]				
QACCD2054XHZZ	1-59	AP		B
QCNCM2401SC0B	6-93	AA		C
QCNCM2508SC1D	6-88	AF	N	C
QCNCM2638SC0F	6-92	AE		C
QCNCM7014SC0B	6-87	AD		C
QCNCM7014SC0C	6-91	AA		C
QCNCM7014SC0F	6-89	AB		C
QCNCM7014SC0G	6-86	AB		C
QCNCM7014SC1E	6-94	AC		C
QCNCM7014SC1F	6-90	AD		C
"	10-1	AD		C
"	10-2	AD		C
QCNCW715PAFZZ	7-34	AG	N	C
QCNWG208BXHZZ	5-6	AF		C
QCNWG209BXHOW	5-2	AH		C
CCNWN483AXHZZ	4-20	AD		C
CCNWN485AXHZZ	1-33	AG		C
CCNWN486AXHZZ	1-44	AM		C
CCNWN487AXHZZ	1-16	AL		C
"	3-9	AL		C
CCNWN496AXHZZ	1-60	AL		C
QFS-P2010SCZZ	6-99	AD		A
QJAKZ2073SCFB	7-35	AD		C
QJAKZ2079XH0D	7-33	AD		C
QSW-F2224SCZZ	4-21	AE		C
QSW-K0005AWZZ	3-6	AC		C
"	9-1	AC		C
QSW-M2246AXZZ	3-7	AH		C
"	9-2	AH		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
QSW-M2294XHZZ	3-8	AE		C
"	9-3	AE		C
QSW-Z2317XHZZ	7-80	AF		C
[R]				
RC-FZ3024SCZZ	7-6	AG		C
RCRSB0297AFZZ	6-196	AD		B
RCRSP2176SCZZ	6-195	AG		B
RDENT2171XHZA	1-61	BG	N	E
"	8-901	BG	N	E
RH-IX2168SCZZ	6-101	BB		B
RH-IX2270XHZZ	6-103	AL	N	B
RHEDZ2065XHZZ	1-45	BP		B
RMOTS2175XHZZ	4-22	AX		B
RR-TZ3017SCZZ	6-193	AC		C
RR-TZ3018SCZZ	6-190	AC		C
"	6-191	AC		C
"	6-192	AC		C
RRLYD3433XHZZ	7-32	AH		B
RTRNI2164XHZZ	7-81	AG		B
RUNTZ2080XH01	3-10	BA		E
RUNTZ2082XHZZ	1-34	BR		B
[S]				
SPAKA465CXHZZ	5-14	AF		D
SPAKA466CXHZZ	5-15	AF		D
SPAKA467CXHZZ	5-16	AD		D
SPAKP474CXHZZ	5-18	AB		D
[T]				
TCADZ3282XHZZ	5-9	AD		D
TCADZ3283XHZZ	5-8	AD		D
TCADZ3319XHZZ	5-7	AT	N	D
TINSE4265XHTZ	5-11	AT	N	D
TLABH319DXHZZ	2-31	AD		D
TLABM309DXHZZ	5-12	AD	N	D
[U]				
UBATL2049SCZZ	6-1	AF		B
[V]				
VCCCCY1HH101J	6-14	AA		C
"	6-15	AA		C
"	6-16	AA		C
"	6-17	AA		C
"	6-18	AA		C
"	6-19	AA		C
"	6-21	AA		C
"	6-63	AA		C
"	6-64	AA		C
"	6-65	AA		C
"	6-75	AA		C
"	6-76	AA		C
"	6-77	AA		C
"	6-78	AA		C
"	6-79	AA		C
VCCCCY1HH200J	6-45	AA		C
"	6-48	AA		C
VCCCCY1HH220J	6-32	AA		C
"	6-33	AA		C
VCCCCY1HH221J	6-35	AA		C
"	7-13	AA		C
"	7-19	AA		C
VCCCCY1HH330J	7-25	AA		C
"	7-27	AA		C
VCEAGA0JW227M	6-2	AD		C
"	6-8	AD		C
VCEAGA1CW476M	7-8	AB		C
VCEAGA1EW476M	6-3	AA		C
"	6-9	AA		C
VCEAGA1HW106M	6-4	AA		C
"	6-5	AA		C
"	6-6	AA		C
"	6-7	AA		C
VCEAGA1HW107M	7-5	AA		C
VCEAGA1HW226M	6-10	AB		C
"	7-3	AB		C
"	7-4	AB		C
"	7-7	AB		C
"	7-9	AB		C
VCKYCY1AB105K	6-66	AB	N	C
"	6-68	AB	N	C
"	6-83	AB	N	C
VCKYCY1AF105Z	6-28	AC		C
"	6-39	AC		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VCKYCY1AF105Z	6-41	AC		C
"	6-42	AC		C
"	6-43	AC		C
"	6-44	AC		C
"	6-46	AC		C
"	6-47	AC		C
"	6-49	AC		C
"	6-52	AC		C
"	6-53	AC		C
"	6-58	AC		C
"	6-62	AC		C
"	6-72	AC		C
VCKYCY1CB104K	6-56	AB		C
"	6-70	AB		C
"	6-71	AB		C
"	7-28	AB		C
VCKYCY1HB102K	6-12	AA		C
"	6-13	AA		C
"	6-59	AA		C
"	6-61	AA		C
"	6-80	AA		C
"	6-81	AA		C
"	6-82	AA		C
"	7-11	AA		C
"	7-12	AA		C
"	7-15	AA		C
"	7-23	AA		C
VCKYCY1HB103K	6-27	AA		C
"	6-34	AA		C
VCKYCY1HB222K	7-17	AA		C
VCKYCY1HB471K	6-84	AB		C
VCKYCY1HB472K	6-50	AA		C
VCKYCY1HB821K	7-26	AA		C
VCKYCY1HF104Z	6-11	AA		C
"	6-20	AA		C
"	6-22	AA		C
"	6-23	AA		C
"	6-24	AA		C
"	6-25	AA		C
"	6-26	AA		C
"	6-29	AA		C
"	6-30	AA		C
"	6-31	AA		C
"	6-36	AA		C
"	6-37	AA		C
"	6-38	AA		C
"	6-40	AA		C
"	6-51	AA		C
"	6-54	AA		C
"	6-55	AA		C
"	6-57	AA		C
"	6-60	AA		C
"	6-73	AA		C
"	6-74	AA		C
"	6-85	AA		C
"	6-167	AA		C
"	7-14	AA		C
VCKYPA1HB103K	7-10	AA		C
VCKYTV1CF105Z	7-30	AB		C
"	7-31	AB		C
VCKYTV1HF104Z	7-16	AA		C
"	7-20	AA		C
"	7-21	AA		C
"	7-22	AA		C
VHDDSS133//1	7-36	AA		B
"	7-37	AA		B
VHDHRW0202B-1	6-95	AD		B
VHD1SS355//1	6-96	AB		B
"	6-97	AB		B
"	6-98	AB		B
VHEHZ2C1///1	7-83	AA		B
"	7-84	AA		B
VHEHZ27-1//1	7-85	AB		B
VHEMTZ1J00B-1	7-86	AC		B
"	7-87	AC		B
VHE02CZ180Y-1	6-198	AC		B
VHE1N4748A/-1	6-197	AC		B
VHIF002/TA18A	6-100	BN	N	B
VHIKID65001AP	6-104	AE		B
VHIKM29W040-1	6-106	AV		B

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VHINJM2113M-1	6-105	AG		B
VHINJM2904M-2	7-38	AG		B
"	7-39	AG		B
VHINJM78L05A1	7-79	AD		B
VHISCE214V/-1	6-102	AF	N	B
VHIS814A33AUC	6-194	AH		B
VHPPC817X4/-1	7-41	AC		B
VHPSG206S//1	7-42	AG		B
"	7-43	AG		B
VHVERZV5D471/	7-1	AC		B
"	7-2	AC		B
VHVRA391PV6-1	7-82	AE		B
VRD-HT2EY101J	7-49	AA		C
VRD-HT2HY223J	7-51	AA		C
VRS-CY1JB000J	6-67	AA		C
"	6-69	AA		C
"	6-107	AA		C
"	6-108	AA		C
"	6-109	AA		C
"	6-123	AA		C
"	6-129	AA		C
"	6-133	AA		C
"	6-187	AA		C
"	6-188	AA		C
"	6-189	AA		C
"	7-24	AA		C
"	7-29	AA		C
"	7-55	AA		C
"	7-63	AA		C
"	7-71	AA		C
"	7-72	AA		C
VRS-CY1JB101J	6-183	AA		C
VRS-CY1JB102J	6-132	AA		C
"	6-141	AA		C
"	6-142	AA		C
"	6-144	AA		C
"	6-147	AA		C
"	6-162	AA		C
"	6-176	AA		C
"	7-53	AA		C
"	7-58	AA		C
"	7-65	AA		C
"	7-70	AA		C
VRS-CY1JB103J	6-120	AA		C
"	6-126	AA		C
"	6-128	AA		C
"	6-138	AA		C
"	6-165	AA		C
VRS-CY1JB104J	6-136	AA		C
"	6-158	AA		C
"	6-160	AA		C
VRS-CY1JB105J	6-145	AA		C
"	6-168	AA		C
VRS-CY1JB106J	6-166	AA		C
VRS-CY1JB124J	6-173	AA		C
VRS-CY1JB133J	7-60	AA		C
VRS-CY1JB150J	6-110	AA		C
VRS-CY1JB151J	6-131	AA		C
"	6-185	AA		C
"	6-186	AA		C
VRS-CY1JB152J	7-62	AA		C
VRS-CY1JB153J	6-143	AA		C
"	7-75	AA		C
VRS-CY1JB154J	6-135	AA		C
VRS-CY1JB155J	6-152	AA		C
VRS-CY1JB163J	7-54	AA		C
VRS-CY1JB203J	6-149	AA		C
"	6-161	AA		C
"	6-170	AA		C
VRS-CY1JB204J	6-153	AA		C
VRS-CY1JB221J	6-146	AA		C
VRS-CY1JB222J	6-163	AA		C
VRS-CY1JB223J	6-174	AA		C
"	7-73	AA		C
VRS-CY1JB224J	6-137	AA		C
"	6-140	AA		C
"	6-150	AA		C
"	7-61	AA		C
VRS-CY1JB243J	6-155	AA		C
"	7-74	AA		C

PARTS CODE	No.	PRICE RANK	NEW MARK	PART RANK
VRS-CY1JB271J	6-121	AA		C
"	6-122	AA		C
"	6-130	AA		C
"	6-164	AA		C
"	6-172	AA		C
"	6-175	AA		C
"	6-177	AA		C
"	6-179	AA		C
"	6-181	AA		C
"	6-182	AA		C
"	6-184	AA		C
VRS-CY1JB302J	6-148	AA		C
VRS-CY1JB332J	7-56	AA		C
"	7-66	AA		C
"	7-77	AA		C
VRS-CY1JB362J	7-67	AA		C
VRS-CY1JB393J	6-154	AA		C
"	6-180	AA		C
"	7-76	AA		C
VRS-CY1JB471J	6-124	AA		C
"	6-125	AA		C
"	6-127	AA		C
"	6-178	AA		C
VRS-CY1JB472J	6-171	AA		C
VRS-CY1JB474J	6-151	AA		C
"	6-159	AA		C
VRS-CY1JB512J	6-134	AA		C
VRS-CY1JB513J	6-139	AA		C
VRS-CY1JB562J	6-119	AA		C
VRS-CY1JB621J	7-69	AA		C
VRS-CY1JB622J	6-156	AA		C
VRS-CY1JB682J	6-169	AA		C
VRS-CY1JB822J	7-18	AA		C
"	7-59	AA		C
"	7-78	AA		C
VRS-CY1JB913J	6-157	AA		C
VRS-HT3AA510J	7-40	AA		C
VRS-RE3AA122J	7-50	AC		C
VRS-TS2AD151J	7-57	AA		C
VRS-TS2AD223J	7-64	AA		C
VRS-TS2AD332J	7-52	AA		C
VRS-TS2AD823J	7-68	AA		C
VSKRA102M/-3	7-44	AD		B
VSKRA102S/-1	6-118	AD		B
VSKRC102S//1	6-113	AB		B
"	6-114	AB		B
"	6-115	AB		B
"	6-117	AB		B
VSKRC106S//1	6-112	AD		B
"	7-46	AD		B
"	7-47	AD		B
"	7-48	AD		B
VSKTA1504GR-1	6-111	AC		B
VSKTC3875GR-1	7-45	AB		B
VSSI4431DY+-1	6-116	AF		B
[X]				
XEBSD20P06000	3-B1	AA		C
XEBSD30P08000	4-B1	AA		C
XEBSD30P10000	1-B1	AA		C
"	2-B2	AA		C
XEBSD30P12000	1-B2	AA		C
XEPSD30P08000	1-B4	AA		C
XWHSN40-08100	1-W1	AA		C
[O]				
OCBBFZ80078E/	8-25	AD	N	C
OCBBFZ89633Z/	8-26	AD		C
OCBLRZ6803ZP/	8-29	AQ		C
OCBPZC0307ZZ/	8-15	AD		C
OCBPJCSX2501/	8-23	AH		A
OCBPZ0194ZZ/	8-14	AC		C
OCBPZZ1008ZZ/	8-24	AH	N	A
OCBUAC0034EL/	8-34	AD		B
OCBUAC0255AM/	8-32	AD		B
OCBUAC0264AK/	8-33	AD		B
OCBUAG0225AZ/	8-31	AQ		B
OCBUBC0070AM/	8-22	AG	N	B
OCBUBC0125DK/	8-16	AD		B
"	8-17	AD		B
"	8-18	AD		B
"	8-19	AD		B

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